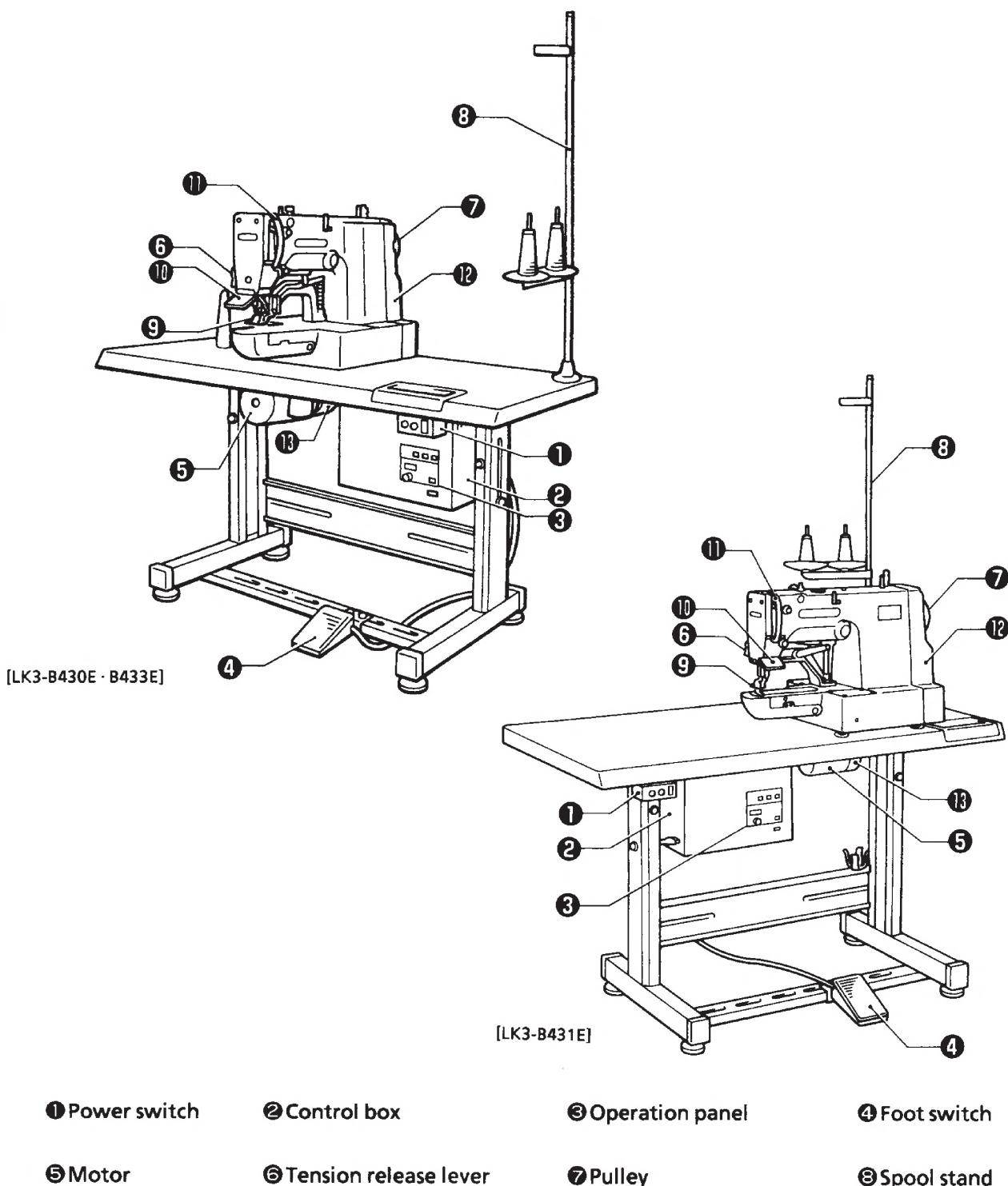


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1. NAME OF EACH PART



Safety devices;

⑨ Finger guard	⑩ Eye guard	⑪ Thread take-up cover	⑫ Belt cover
⑬ Motor cover			

2. SPECIFICATIONS

2-1. Specifications

	LK3-B430E Electronic lockstitch bar tacker	LK3-B431E Electronic lockstitch belt loop bar tacker	LK3-B433E Electronic lockstitch decorative pattern tacker
Stitch formation	Single needle lock stitch		
Maximum sewing speed	2,500 spm	2,000 spm	
Maximum pattern size	30 × 10 mm max.	30 × 30 mm max.	
Feed mechanism	R-θ intermittent feed mechanism (pulse-motor driven mechanism)		
Stitch length	0.1-10.0 mm		
Number of stitches	Variable (21, 28, 35 and 42 stitches pre-set)	Variable	
Maximum stitch number	5,000 stitches (including 4,000 stitches which can be added)		
Work clamp lifter	Solenoid type		
Work clamp height	17 mm max.		
Rotary hook	Shuttle hook (shuttle hook 1.8, optional)		
Wiper device	Standard equipment		
Thread trimmer device	Standard equipment		
Data storage method	PROM (Any sewing pattern can be added using BAS-PC/300.)		
Number of stored data	12 sewing patterns are set already.	5 sewing patterns are set already.	
	(Up to 50 patterns can be added. Total number of stitches of stored data which can be added is within 4,000.)		
Motor	Three-phase 400 W induction motor		
Weights	Machine head: 47 kg Control box: 9-19 kg (depending on destination)		
Power supply	Single-phase 220-230 V 3-phase 220, 380, 400, 415 V Maximum electric power consumption; 600 VA		

Main use

Jeans … Belt loop attachment, pocket top, front, crotch
 Slacks… Belt loop attachment, side-pocket top, rear pocket, front
 Jackets, foundation garments, underwear, etc.

2-2. Program list

[LK3-B430E]

- There are twelve standard sewing patterns.

For each specification, sewing patterns are limited as shown in the table below. (Any program is available as long as the sewing pattern is within the work clamp and feed plate in size.)

Specification	Use	Program No.	Sewing pattern	No. of stitches	Standard bar tacking length	Standard bar tacking width	Sewing speed	
-1	For general clothing	01		42	16 mm	2 mm	① 1,700 - 2,000 spm	
		04		30	16 mm	2 mm		
-5		05		29	10 mm	2 mm	② 1,700 - 2,000 spm	
		08		21	7 mm	2 mm		
-2	For denim	02		42	20 mm	3 mm	③ 1,700 - 2,500 spm	
		03		35	20 mm	3 mm		
		06		29	16 mm	3 mm		
-7	For knitted wear	07		28	8 mm	2 mm	④ 1,700 - 2,000 spm	
		09		21	7 mm	2 mm		

◎ To prevent thread breakage due to heat, set the sewing speed to a maximum of 2,000 spm for sewing general clothing and knitted wear.

○ Standard work clamp and feed plate for subclasses -1 and -5 are different from those used on other machines.

<Straight stitches>

Program No.	Sewing pattern	No. of stitches	Standard bar tacking length	Standard bar tacking width
10		21	10 mm	—
11		28	10 mm	—
12		28	20 mm	—

- If you want to sew a pattern other than one of the standard 12 patterns, you can create your original pattern using the BAS-PC/300. Consult with your local Brother Sales Office for details.

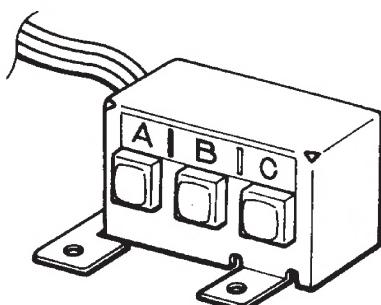
[LK3-B431E]

Program No.	Sewing pattern	No. of stitches	Standard bar tacking length	Standard bar tacking width
01		21	10 mm	—
02		28	10 mm	—
03		28	20 mm	—
04		35	25 mm	—
05		42	25 mm	—

2-3. Optional parts

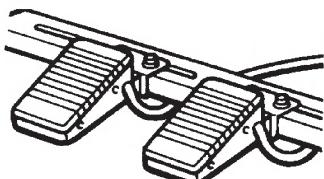
○ Handy swich

This switch enables the operator easy access to 6 different types of sewing data registered in the user program (see page 34). Sewing data can be switched easily even with workpiece clamped.
Make sure that the sewing pattern is within the dimensional limits of the work clamp and feed plate.



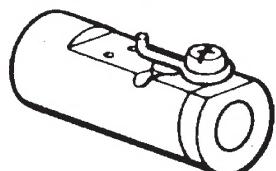
○ Two-pedal foot switch ...

The switch has an independent presser switch (left side) and start switch (right side).



○ Liquid cooling tank

This helps to prevent thread breakages caused by friction when using synthetic threads.
Fill the tank with silicone oil (100 cs).



3. INSTALLATION

CAUTION

- Machine installation should only be carried out by a qualified technician.
- Contact your Brother dealer or a qualified electrician for any electrical work that may need to be done.
- The sewing machine head weighs more than 47 kg. The installation should be carried out by two or more people.
- Do not connect the power cord until installation is complete, otherwise the machine may operate if the foot switch is depressed by mistake, which could result in injury.
- Hold the machine head with both hands when tilting it back or returning it to its original position. Furthermore, after tilting back the machine head, do not push the face plate side or the pulley side from above, as this could cause the machine head to topple over, which may result in personal injury or damage to the machine.
- All cords should be secured at least 25 mm away from any moving parts. Furthermore, do not excessively bend the cable or secure it too firmly staples, otherwise there is the danger that fire or electric shocks could occur.
- Be sure to connect the ground. If the ground connection is not secure, you run the risk of receiving a serious electric shock.
- Install the belt covers to the machine head and motor.
- Avoid setting up the sewing machine near sources of strong electrical noise such as high-frequency welding equipment. If this precaution is not taken, incorrect machine operation may result.

3-1. Power table

- Use the power table which has been specially designed for each sewing machines.

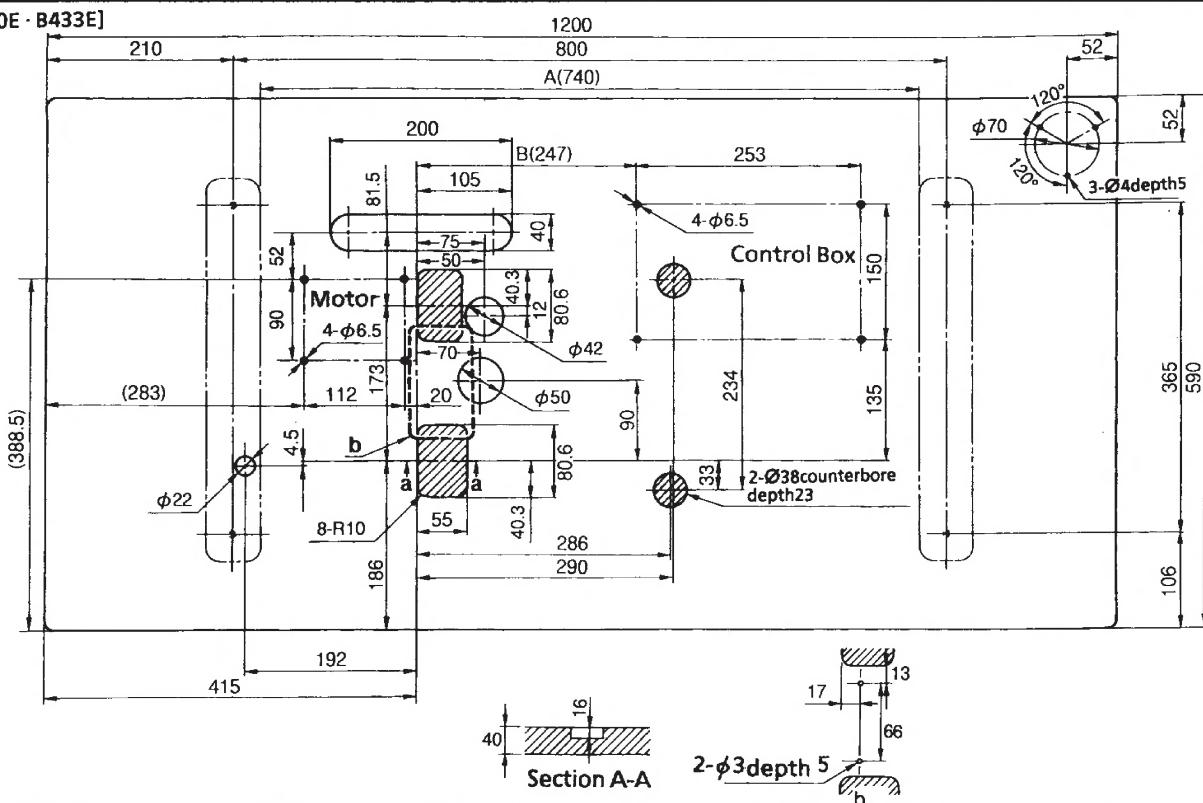
	Model	Model code
Table/legs assembly	B430E · B433E	127-Z30-00001
	B431E	127-Z31-00001

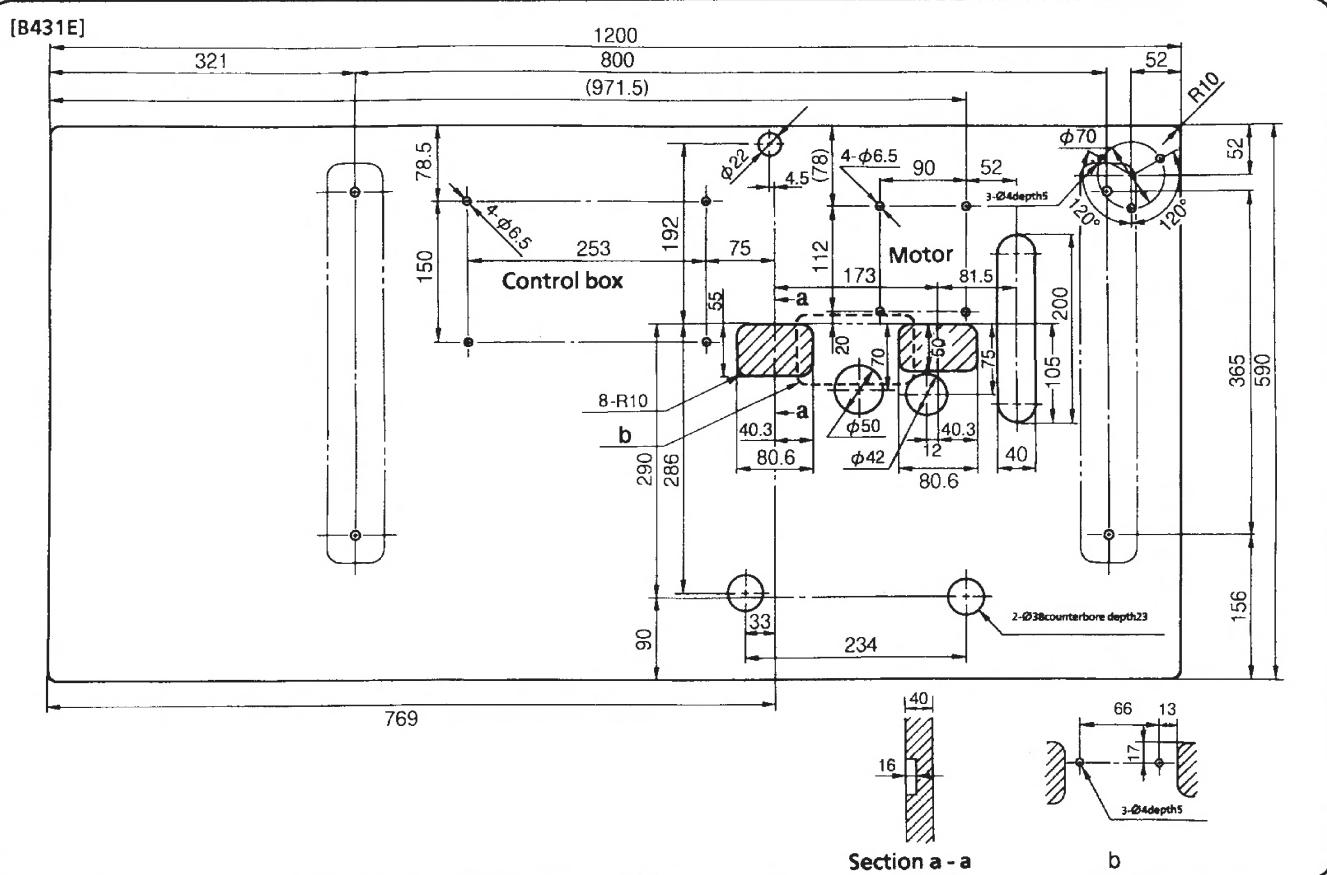
*If using a commercially-available table, process it as shown in the illustration below.

NOTE: The thickness of the table should be at least 40 mm, and it should be strong enough to bear the weight and vibration of the sewing machine.

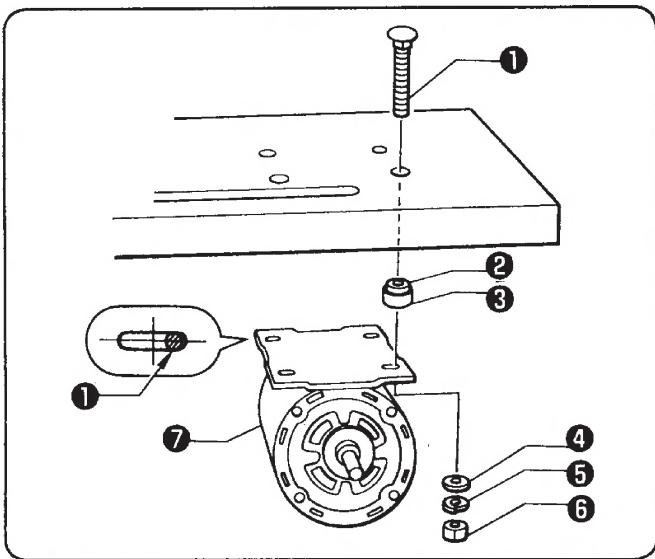
If the distance A between the insides of the legs is less than 740 mm, move the control box installation position closer to the motor (B = 247 mm).

[B430E - B433E]



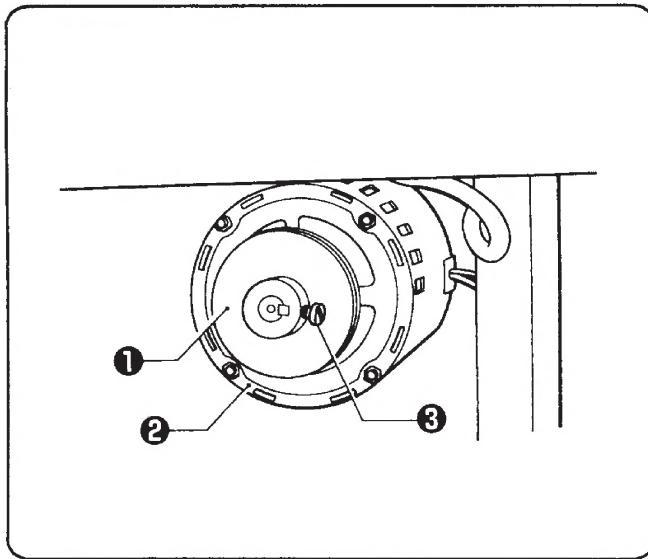


3-2. Installing the motor



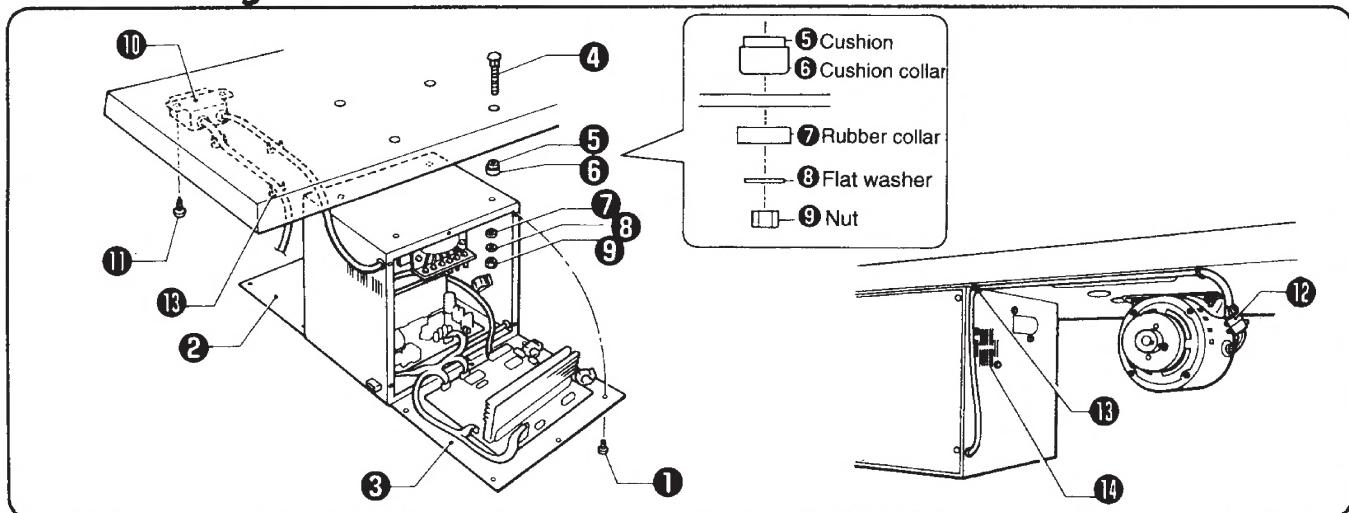
Install the motor ⑦ to the work table with the four accessory bolts ①, cushions ②, cushion collars ③, flat washers ④, spring washers ⑤ and nuts ⑥. At that time, fix by setting bolts ① a little to the right of oval hole on motor.

3-3. Installing the motor pulley



Place the motor pulley ① onto the shaft of the motor ② so that the key groove is aligned, and then tighten the set screw ③ so that the center of the V groove in the motor pulley ① is aligned as closely as possible with the center of the belt hole in the power table.

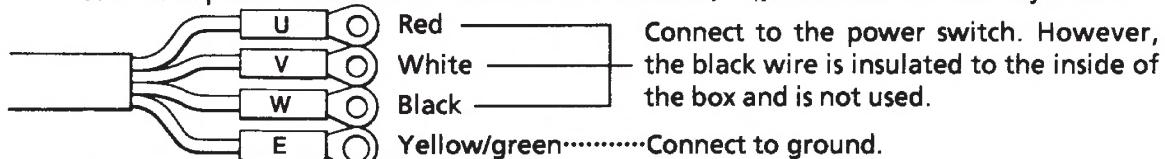
3-4. Installing the control box



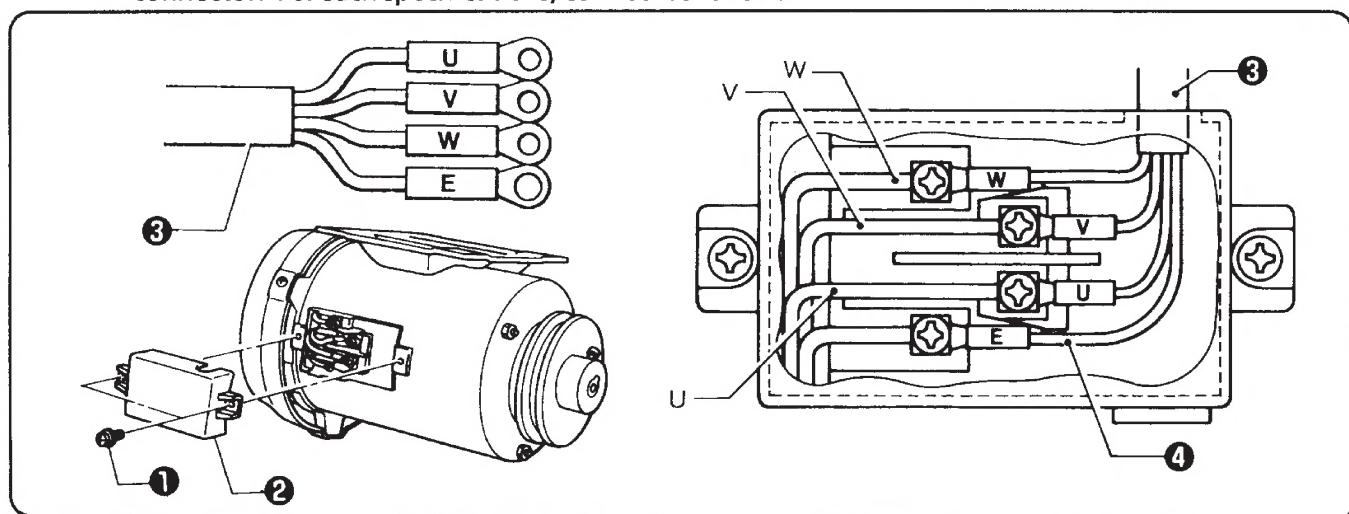
1. Remove the 12 screws ①, and then open the covers (panel mounting assembly ② and main P.C. board mounting plate ③).
Caution: When opening the cover, hold it securely so that it does not fall down.
2. Install the control box with the four accessory bolts ④, cushions ⑤, cushion collars ⑥, rubber collars ⑦, flat washers ⑧ and nuts ⑨ as shown in the illustration above.
*At this time, leave a gap of approximately 1 mm between the work table and the top of the box.
3. Close the covers (panel mounting assembly ② and main P.C. board mounting plate ③), and tighten them with the screws ①.
*The main P.C. board mounting plate ③ will be opened again during "3-11. Connecting the cords", so provisionally tighten it with the screw ①.
4. Install the power switch ⑩ with the two screws ⑪.
5. Insert the connector ⑫ into the connector on the motor.
6. Secure the power switch cord and the motor cord with the five staples ⑬.

NOTE:1 Secure the motor cord with staples in such a way that it does not cross over the outlet port of the cooling fan ⑭.

NOTE:2 Some specifications are not supplied with an accessory power switch ⑩. For these specifications, connect a power switch which satisfies the necessary regulations in the country of use.

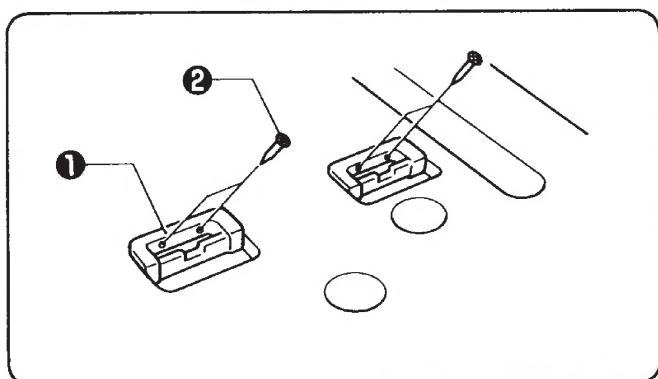


NOTE:3 Some specifications have a motor which is connected by means of a terminal board instead of by a connector. For such specifications, connect as follows.



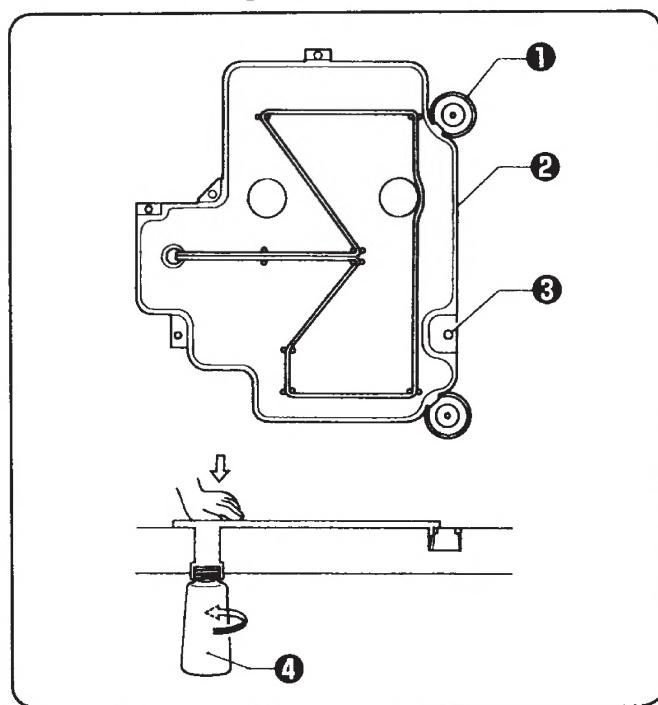
1. Loosen the screw ①, and then open the terminal board cover ②.
2. Pass the motor cord ③ through the hole in the top of the terminal board, align the U, V and W marks on the cord with the terminals marked U, V and W, and then secure the cords with the screws.
3. Secure the ground wire ④ of the motor cord ③ in the position shown in the illustration.
4. Install the terminal board cover ② with the screw ①.

3-5. Installing the rubber cushions



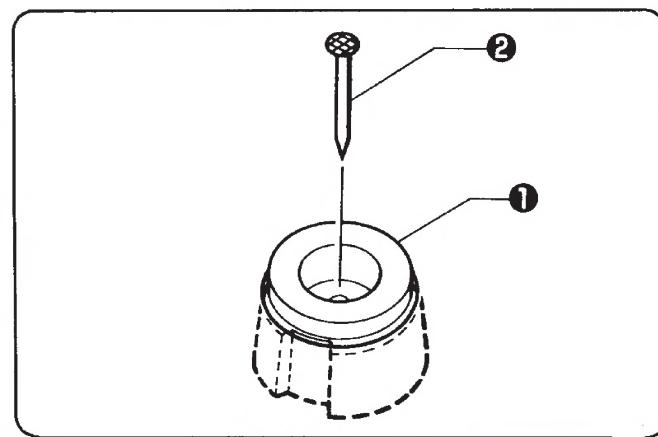
Install the rubber cushions ① with the nails ②.

3-6. Installing the oil pan



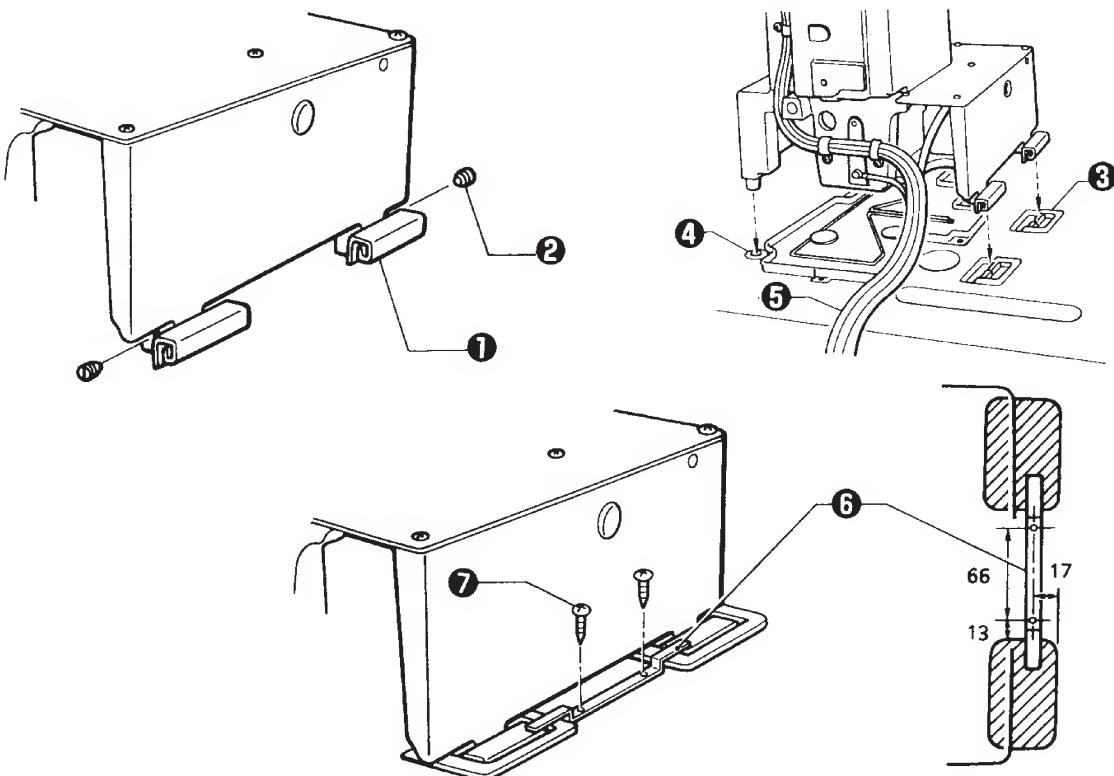
1. Insert the tabs of the oil pan ② into the holes for the cushions ①, and then secure it in place with the five nails ③ so that the oil pan ② is not at an angle.
2. While pushing the oil pan ② down from above, screw in the oil container ④.

3-7. Installing the cushions



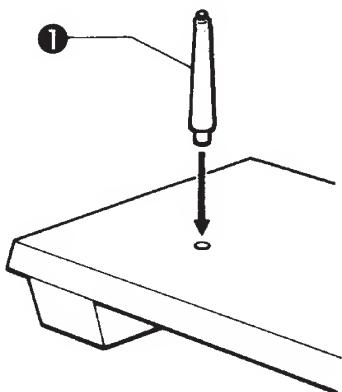
Place the two cushions ① into the holes in the work table, and secure them in place with the nails ②.

3-8. Installing the machine head



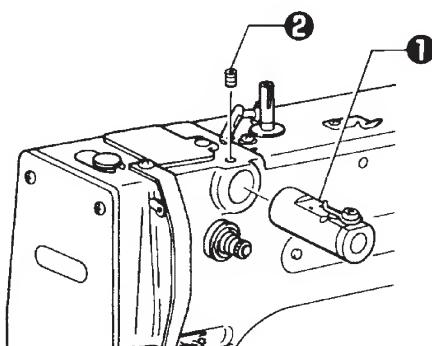
1. Insert the head hinges ① into the machine head so that they are parallel, and then secure them with the two set screws ②.
2. Place the machine head gently on top of the rubber cushions ③ and cushions ④.
NOTE: Pull the cords ⑤ out as shown in the illustration above in order to prevent them from being clamped by the machine head.
3. Install the hinge presser ⑥ with the two screws ⑦.

3-9. Installing the head rest



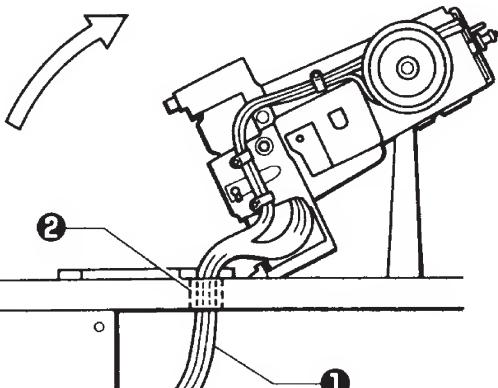
Tap the head rest ① into the table hole.
NOTE: Tap the head rest securely into the table hole.

3-10. Installing the liquid cooling tank, optional

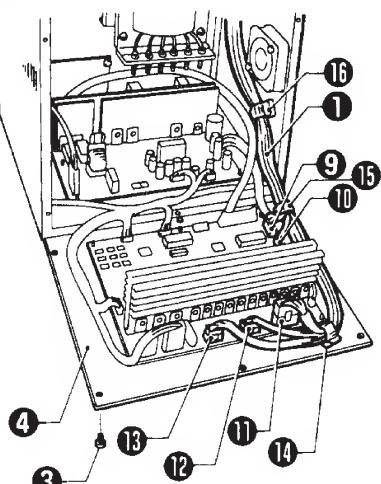


1. Remove the rubber plug, and then push the liquid cooling tank ①.
2. Tighten it with the set screw ②.

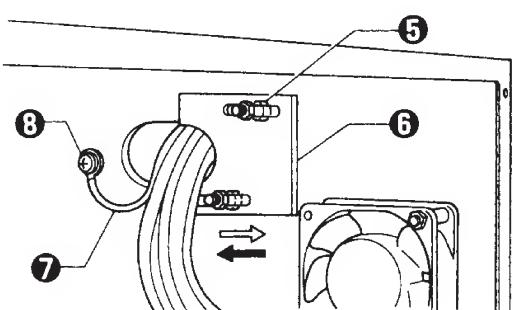
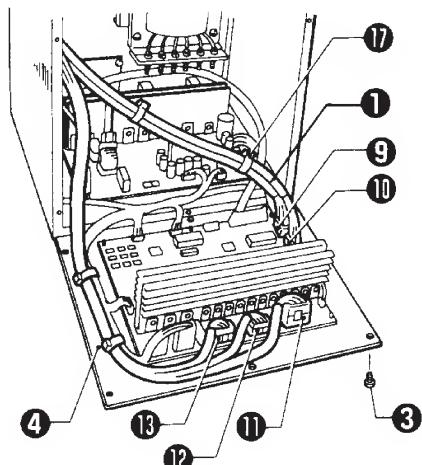
3-11. Connecting the cords



[B430E · B433E]

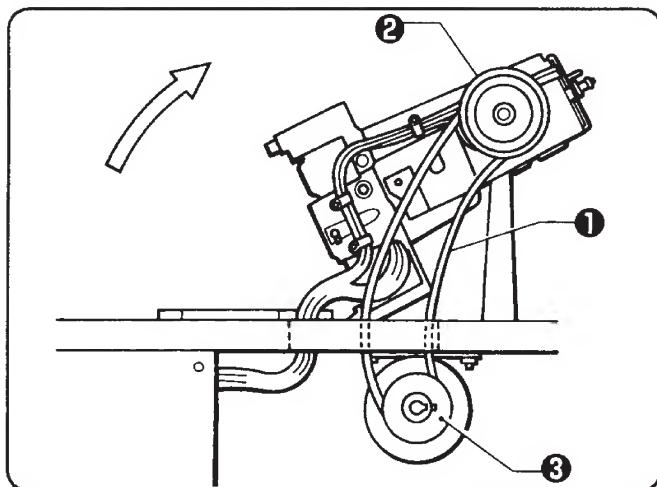


[B431E]



1. Gently tilt back the machine head.
Caution: After tilting back the machine head, do not push the face side or the pulley side from above.
2. Pass the cords ① through the hole ② in the work table.
3. Gently return the machine head to its original position.
4. Remove the screws ③, and then open the control box cover (main P.C. board mounting plate ④).
Caution: When opening the cover, hold it securely so that it does not fall down.
5. Loosen the two screws ⑤, and then open the cord presser plate ⑥ in the direction of the white arrow and pass the cords ① through the opening.
6. Loosen the screw ⑧, and then connect the ground wire ⑦ that is coming from the machine head as shown in the illustration at left.
7. Securely insert each of the connectors as indicated below.
(Connection indications)
Connector ⑨ for sensor
(9-pin with ① mark) *This is indicated on the P.C. board
Connector ⑩ for synchronizer
(5-pin with ② mark) ② SYNCHRO
Connector ⑪ for solenoid
(4-pin with ⑤ mark) ⑤ SOL
Connector ⑫ for pulse motor Y
(4-pin (blue) with ⑥ mark) ⑥ YPM (blue)
Connector ⑬ for pulse motor X
(4-pin with ⑦ mark) ⑦ XPM
8. [B430E · B433E]
Secure the cords ① with the cord clamps ⑭ ⑮ ⑯.
[B431E]
Secure the cords ① to the harness with the ties ⑰.
9. Close the cord presser plate ⑥ in the direction of the black arrow, and secure it by tightening the screws ⑤.
NOTE: Check that the cords do not get pulled when the machine head is tilted back gently.
10. Tighten the cover (main P.C. board mounting plate ④) with the six screws ③.

3-12. Installing the V-belt



1. Gently tilt back the machine head, and then place the V-belt ① into the V grooves on the machine head pulley ② and the motor pulley ③.

Caution: After tilting back the machine head, do not push the face plate side or the pulley side from above.

2. Gently return the machine head to its original position.

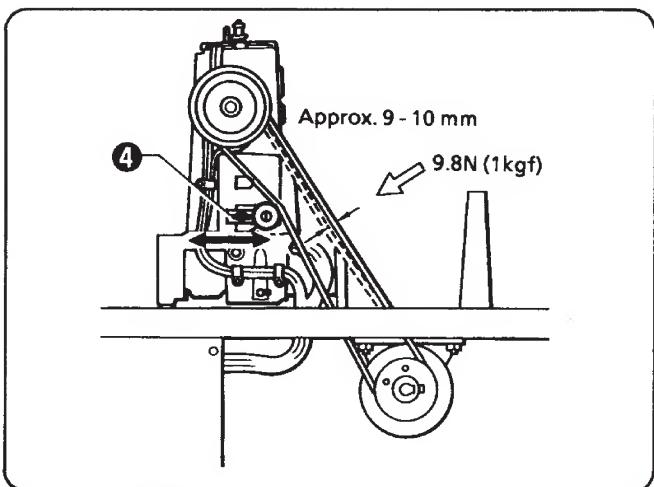
*Be careful not to clamp the cords at this time.

NOTE: Use brother specified V belt (belt, VM).

The V-belt may stretch slightly when it is first used.

When above belt tension is weak, this will be cause of following problem;

- Noise & vibration become large.
- Needle up stop position becomes unstable.
- Error message (E-5) is displayed.

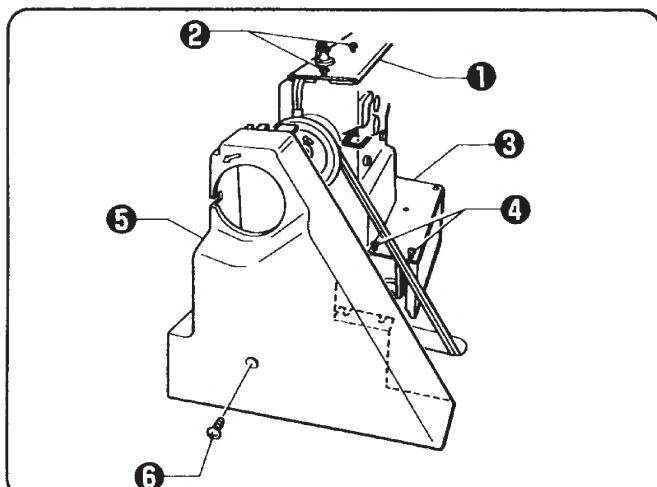


3. Install the accessory tension pulley assembly ④ to the machine head with the accessory flat washer, spring washer and bolt.

4. Adjust the belt tension by moving the tension pulley assembly to the right and left so that there is 9 - 10 mm of deflection in the V-belt ① when it is gently pushed in the middle with a force of approximately 9.8N (1kgf).

*This tension is slightly stronger than BAS-300 series.

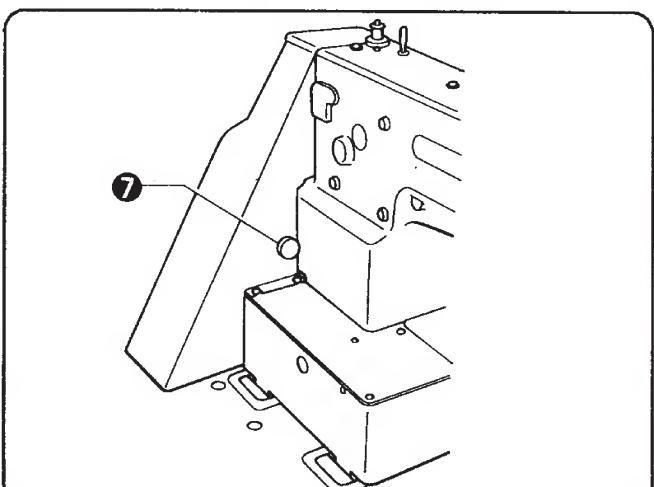
3-13. Installing the belt cover



1. Loosen the two screws ② of the upper cover ① and the two screws ④ of bed cover L ③.

2. Insert the belt cover ⑤ in the direction of the arrow, and then secure it with the two screws ②, the two screws ④ and the screw ⑥.

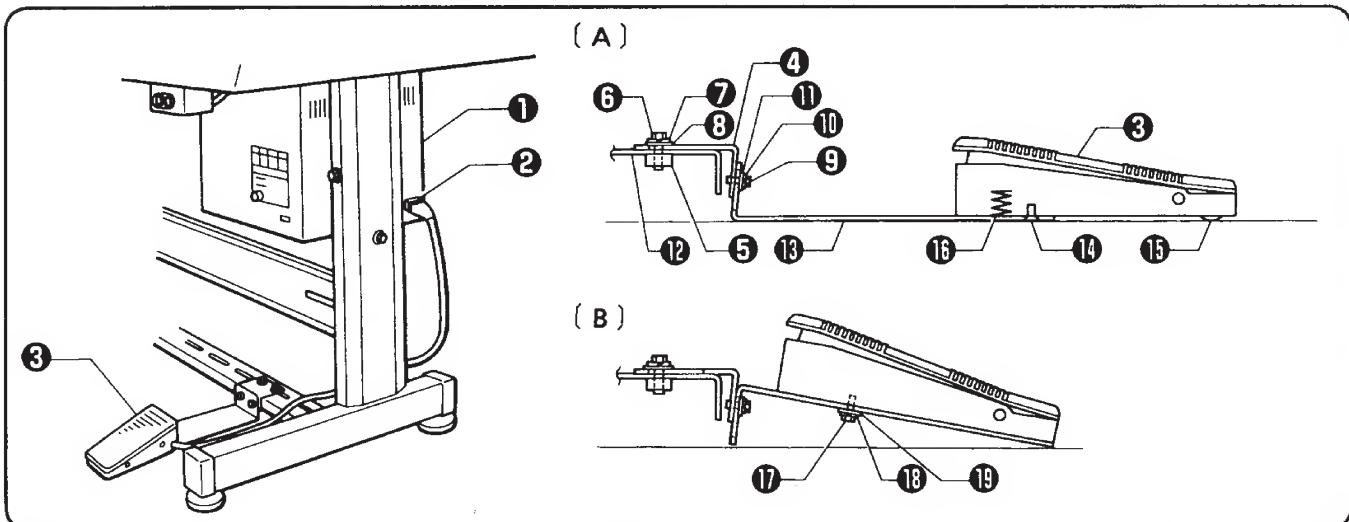
*When tilting back the machine head, loosen the screws ② and ④, remove the screw ⑥ and then remove the belt cover ⑤ first.



3. Attach the rubber plug ⑦ to the belt cover.

*The hole in the belt cover is for the cord for the optional handy switch. Remove the rubber plug ⑦ when using it.

3-14. Installing the foot switch



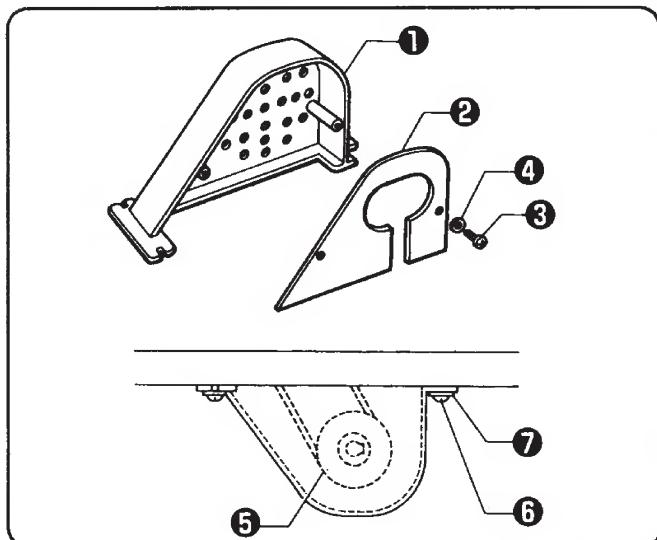
1. Insert the connector of the foot switch ③ into the connector ② of the control box ①.
2. Install the foot switch ③ to the work table leg ② with foot switch support plate A ④, foot switch support plate C ⑤, the bolt ⑥, spring washer ⑦, flat washer ⑧, bolt ⑨, spring washer ⑩ and flat washer ⑪ as shown in Figure A.

★ If foot switch support plate B ⑬ is used in a back-to-front position, it can be used as shown in Figure B.

1. Remove the screw ⑭ and rubber plug ⑮.
*Note that the spring ⑯ will come out when the screw ⑭ is removed.
2. Turn foot switch support plate B ⑬ back to front, and then install it with the bolt ⑰, spring washer ⑱ and flat washer ⑲ as shown in Figure B.

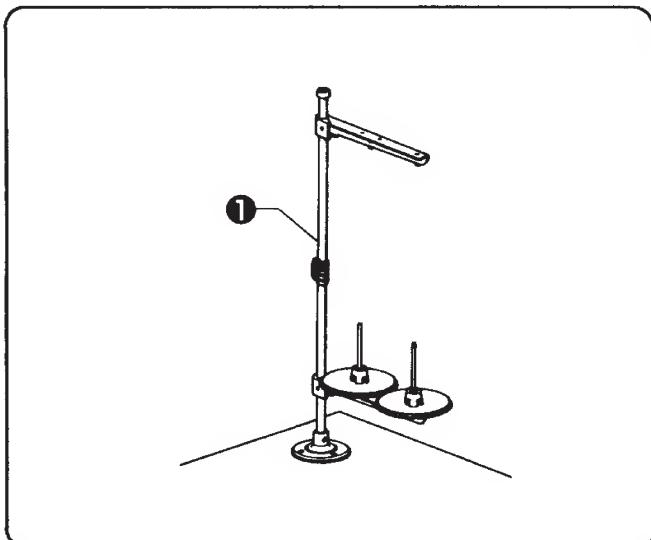
NOTE: If using the optional two-pedal foot switch, change the setting of DIP switch A on the operation panel while referring to "Setting the presser mode" on page 32.

3-15. Installing the motor cover



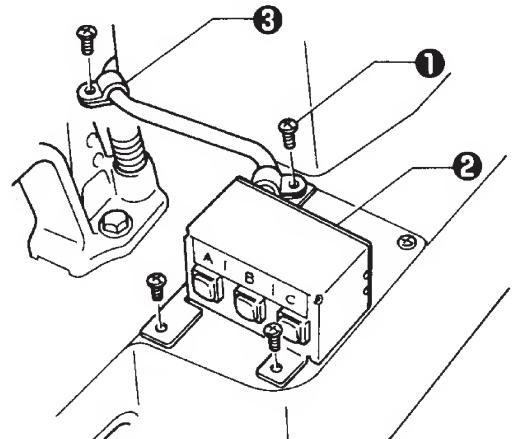
1. Install the motor cover ① to the motor back cover ② with the screws ③ and the flat washers ④.
2. Pass the motor shaft through the notch in the motor back cover ②, and then tighten the screws ⑥ and the washers ⑦ so that the clearance between the motor pulley ⑤ and the motor cover ① is uniform.

3-16. Installing the spool stand

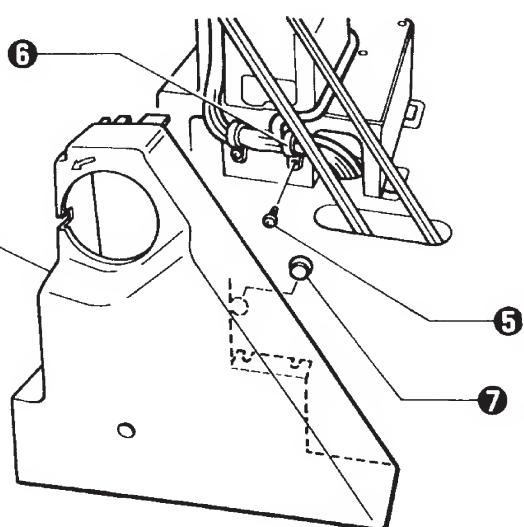


Assemble the spool stand ① while referring to the spool stand instruction manual, and then install the spool stand ① at the right side of the work table.

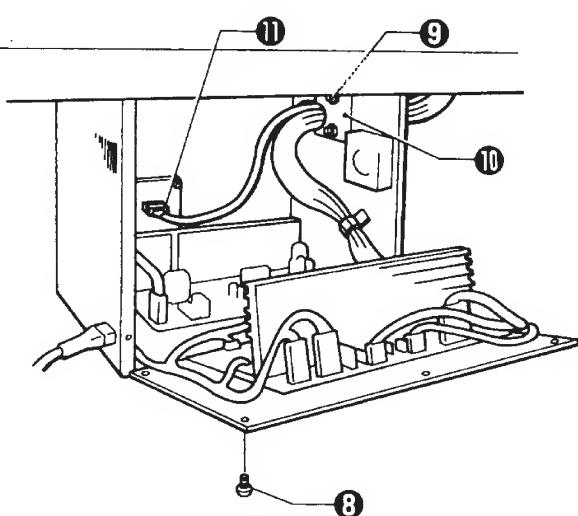
3-17. Installing the handy switch, optional



1. Remove the four screws ①, and then install the handy switch ② as shown in the illustration.
2. Secure the cord with the two accessory cord clamps ③.



3. Remove the belt cover ④.
4. Remove the screw ⑤, and then secure the handy switch cord with the cord clamp ⑥.
5. Remove the rubber plug ⑦ from the belt cover ④, and then install the belt cover ④ so that the handy switch cord passes through the cord hole.



6. Remove the six screws ⑧, and then open the control box cover.
Caution: When opening the cover, hold it securely so that it does not fall down.
7. Loosen the two screws ⑨, open the cord presser plate ⑩ and then pass the handy switch cord through.
8. Securely insert the connector ⑪ as shown in the illustration.
9. Close the cord presser plate ⑩ and then tighten the two screws ⑨.
10. Tighten the control box cover with the six screws ⑧.

4. LUBRICATION

CAUTION

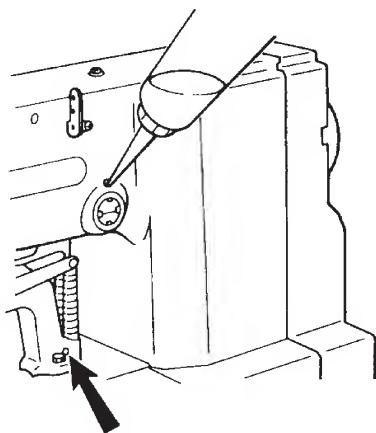
-  • Turn off the power switch before starting lubricating, otherwise the machine may operate if the foot switch is depressed by mistake, which could result in injury.
-  • Be sure to wear protective goggles and gloves when handling the lubricating oil and grease, so that they do not get into your eyes or onto your skin, otherwise inflammation can result. Furthermore, do not drink the oil or eat the grease under any circumstances, as they can cause vomiting and diarrhoea.
Keep the oil out of the reach of children.

NOTE 1: Fill the machine with oil when the oil level is down to about one-third full in the oil sight glass. If oil is not added and the oil drops below this level, there is the danger that the machine may seize during operation.

NOTE 2: Be sure to let the machine operate for a while after adding the oil.

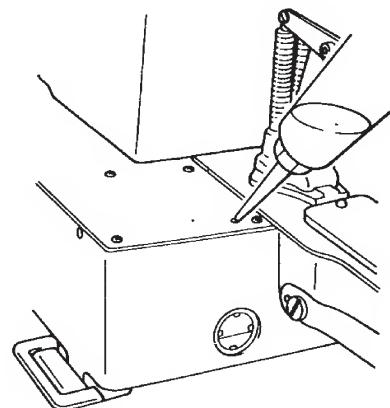
NOTE 3: Use only specified Brother oil (Nisseki Sewing Lube 10) for the machine oil.

4-1. Lubrication points

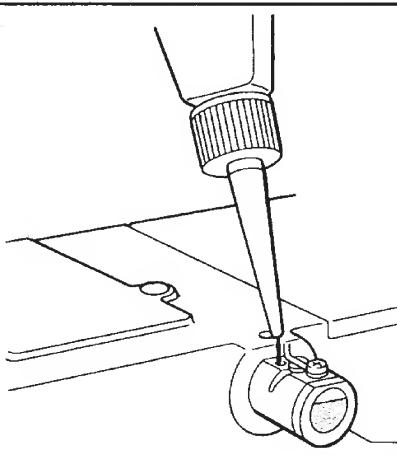


- Fill the arm-side oil tank with oil.

*When setting up the sewing machine and when it hasn't been used for an extended period of time, be sure to add 2-3 drops of oil at the place indicated by the arrow.



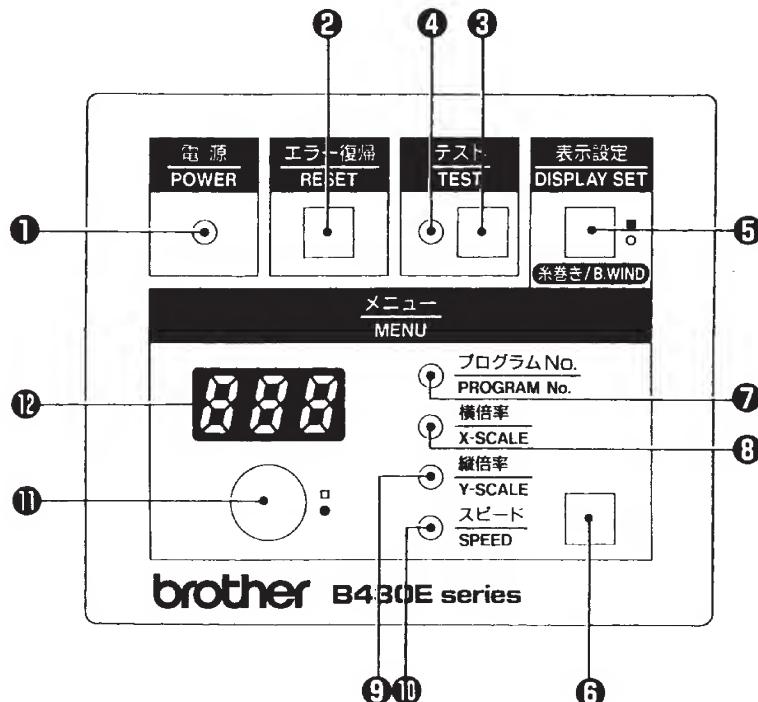
- Fill the bed-side oil tank with oil.



- If using the liquid cooling tank ①, fill it with silicon oil (100 cs).

5. OPERATION

5-1. Name and function of each operation panel item



① POWER indicator

Illuminates when the power switch has been turned on.

② RESET switch

Press this switch to reset the machine when an error occurs.

③ TEST switch

Use this switch when you want to operate only the feed mechanism in order to check a pattern.

④ TEST indicator

Illuminates when the TEST switch has been pressed.

⑤ DISPLAY SET/B.WIND switch

Press this switch at the same time as you turn the rotary switch ⑪. In addition, it is also used when winding the lower thread.

⑥ Menu switch

Use this switch to select a menu (program number, X and Y feed and speed). Each time the switch is pressed, one of the menu indicators (⑦ to ⑩) illuminates, and the setting for that menu item appears in the display ⑫. The illuminated indicator changes as follows each time the switch is pressed.

PROGRAM No. indicator ⑦ → X-SCALE
indicator ⑧ → Y-SCALE indicator ⑨ → SPEED
indicator ⑩

⑦ PROGRAM No. indicator

Illuminates when the menu switch ⑥ is pressed to show the program number setting.

⑧ X-SCALE indicator

Illuminates when the menu switch ⑥ is pressed to show the X-scale setting.

⑨ Y-SCALE indicator

Illuminates when the menu switch ⑥ is pressed to show the Y-scale setting.

⑩ SPEED indicator

Illuminates when the menu switch ⑥ is pressed to show the speed setting.

⑪ Rotary switch

You can change the menu setting which appears in the display ⑫ by turning this switch while pressing the DISPLAY SET/B.WIND switch ⑤.

⑫ Display

This display will indicate the current status for the selected menu, error or memory switch.

5-2. Operating procedure

Preparation

Turn on the power switch.

(The POWER indicator ① will illuminate and the program number will flash in the display ⑫.)

	Factory default	Variable range		
		B430E	B431E	B433E
Program No.	00 ⑪	01 - 12	01 - 05	50 - ⑪
X-scale	100 (%)		50 - 150 (%)	
Y-scale	100 (%)		50 - 150 (%)	
Speed	200 (2,000spm)	100 - 250 (1,000 - 2,500spm)		100 - 200 (1,000 - 2,000spm)

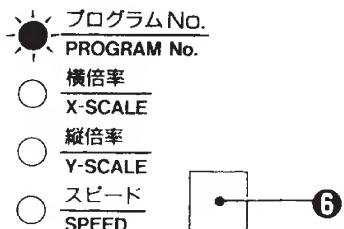
※1 For checking the origin points for X and Y feed

※2 Custom-made program

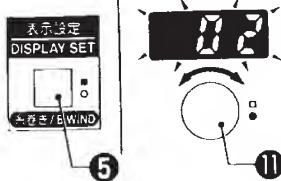
Setting the program number ... Determine the appropriate program from the program list which is given on page 3.

Example: For the B430E, if the machine head specifications are -2, any of pattern Nos. 02, 03 or 06 can be selected.

1 Press the menu switch ⑥ until the PROGRAM No. indicator illuminates.

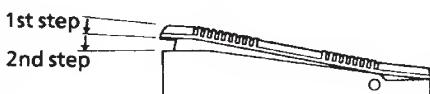


2 While pressing the DISPLAY SET/B.WIND switch ⑤, turn the rotary switch ⑪ until the desired program number is flashing in the display.



3 Depress the foot switch to the second step.

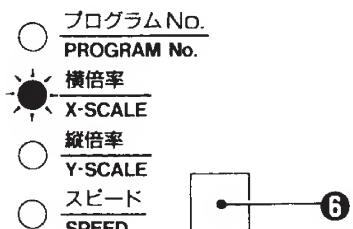
* The display will stop flashing and illuminate steadily, and the feed mechanism will move to the sewing start position.



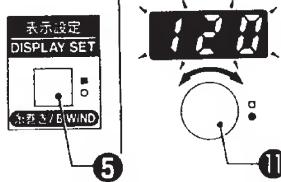
This completes the setting of the program number.

Setting the X-scale and Y-scale

1 Press the menu switch ⑥ until the X-SCALE or Y-SCALE indicator illuminates.



2 While pressing the DISPLAY SET/B.WIND switch ⑤, turn the rotary switch ⑪ until the desired scale setting is flashing in the display. (The setting is displayed as a percentage.)



3 Depress the foot switch to the second step.

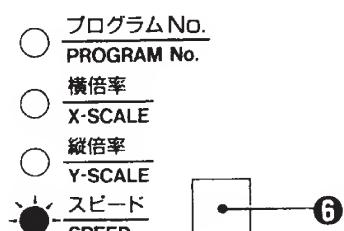
* The display will stop flashing and illuminate steadily, and the feed mechanism will move to the sewing start position.



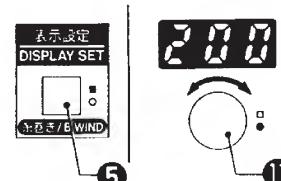
This completes the setting of the X-scale or Y-scale.

Setting the sewing speed

1 Press the menu switch ⑥ until the SPEED indicator illuminates.



2 While pressing the DISPLAY SET/B.WIND switch ⑤, turn the rotary switch ⑪ until the desired speed setting is flashing in the display. (The setting is displayed in units of ten spm.)



NOTE:

Be sure to check the sewing pattern (refer to page 17) after setting has been completed to make sure that the needle hole does not go out of the area circumscribed by the work clamp.

6. CHECKING THE SEWING PATTERN

<When checking by operating only the feed mechanism>

1. Turn on the power switch.
(The POWER indicator will illuminate and the program number will flash in the display.)

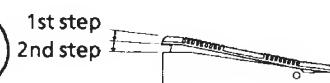


2. Press the TEST switch.
(The TEST indicator will illuminate.)

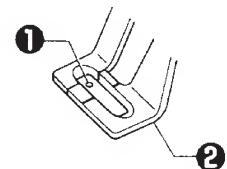


3. Depress the foot switch to the second step.
Only the feed mechanism will move.

(Check that the needle hole ① does not protrude past the frame of the work clamp ②.)



- *If you depress the foot switch again and keep it depressed after the feed mechanism has started to move, the feeding speed will increase.
- *If you would like to stop the feed while it is moving, press the TEST switch.



4. Press the TEST switch.
(The TEST indicator will switch off and the test mode will be cleared.)



5. Depress the foot switch.
The work clamp will rise and the preparation for sewing will be completed.

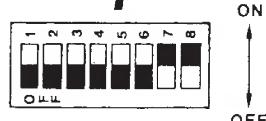
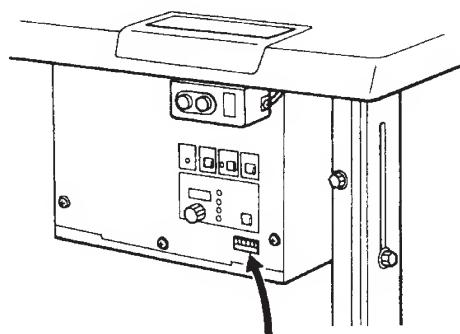


To ensure safety during use.....

- You can prevent accidental changes being made to programs by setting DIP switches 7 and 8 to ON.

When DIP switch 7 is ON
... The sewing pattern cannot be enlarged.

When DIP switch 8 is ON
... The program number cannot be changed.



7. CORRECT USE

7-1. Selecting the needle and thread

Different needles and threads are used for different sewing applications.
Refer to the table at right for details on which needle and thread to select.

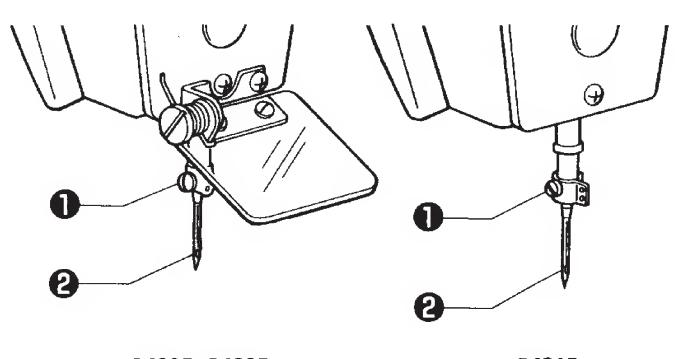
Needle	Thread	Main application
DPx5 #9	#100 - #60	Knitted wear
DPx5 #16	#80 - #50	General clothing
DPx17NY #19	#50 - #20	Denim

7-2. Installing the needle

⚠ CAUTION

- Turn off the power switch before installing the needle, otherwise the machine may operate if the foot switch is depressed by mistake and serious injury could result.

Loosen the set screw ①, insert the needle ② as far as it will go so that the groove is facing toward you (for the B431E, the groove is on the left side), and then tighten the set screw ①.



B430E · B433E

B431E

7-3. Threading the upper thread

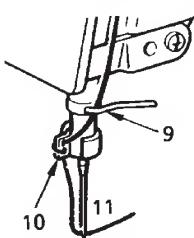
⚠ CAUTION

- Turn off the power switch before threading the thread, otherwise the machine may operate if the foot switch is depressed by mistake and serious injury could result.

Thread the upper thread correctly as shown in the illustration below.

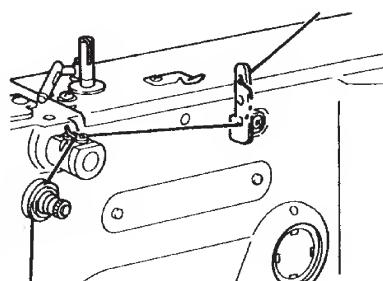
*If the tension release lever ① is raised in the direction of the arrow, it will be easier to open the tension disc ② and pull the thread through.

B430E (For general clothing)
B431E
B433E (For general clothing)



Approx. 40mm

[When using the liquid cooling tank]



7-4. Winding the lower thread

CAUTION



- Do not touch or place anything against any of the moving parts while winding the lower thread, otherwise personal injury or damage to the machine may result.

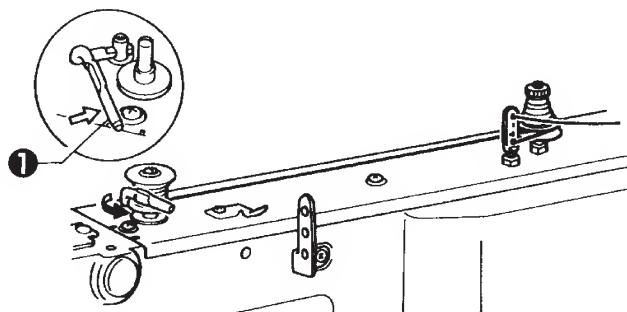
1. Place the bobbin all the way onto the shaft.



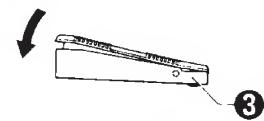
2. Thread the thread as shown in the illustration at right, wind the thread around the bobbin several times in the direction of the arrow, and then press the bobbin presser ①.



3. Turn on the power switch.
(The POWER indicator on the operation panel will illuminate.)



4. Check that the needle is not touching the presser foot, and then while pressing the DISPLAY SET/B.WIND switch ②, depress the foot switch ③ to start the machine. Keep depressing the foot switch ③ until the lower thread stops being wound onto the bobbin.



(Release the DISPLAY SET/B.WIND switch ② after the machine starts operating.
If you release the foot switch before winding is completed, depress it once more while pressing and holding the DISPLAY SET/B.WIND switch ②.)



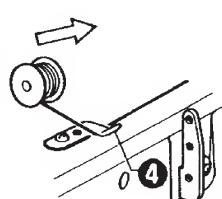
5. The bobbin presser ① will automatically return to its original position after a set amount of thread (80 - 90% of the bobbin capacity) has been wound on.



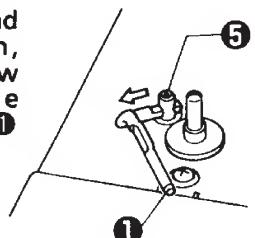
6. Release the foot switch ③.



7. Remove the bobbin, hook the thread onto the knife ④, and then pull the bobbin in the direction of the arrow to cut the thread.



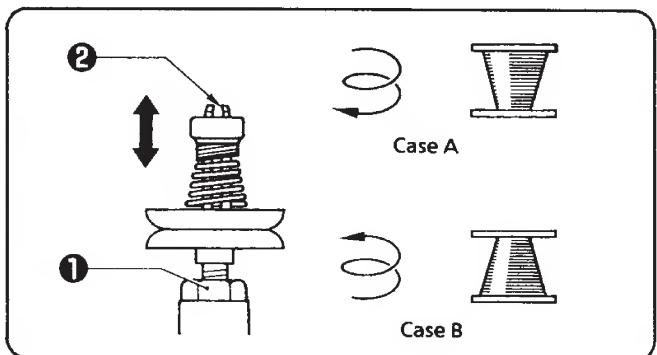
8. To wind more thread onto the bobbin, loosen the set screw ⑤ and pull the bobbin presser ① outward.



«If the thread winds onto the bobbin unevenly»

If the thread winds onto the bobbin unevenly, loosen the nut ① and turn the bobbin winder thread tension stud ② to adjust.

*If the thread winds on as shown in A, turn the bobbin winder thread tension stud ② clockwise; if it winds on as shown in B, turn the bobbin winder thread tension stud ② counterclockwise.

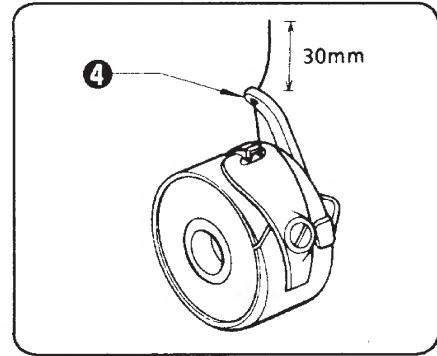
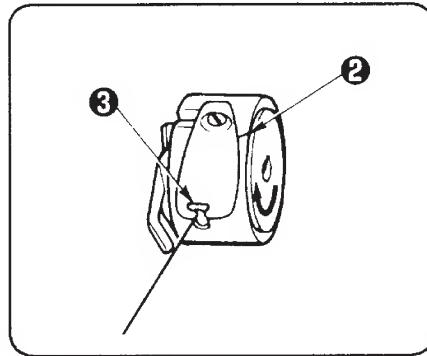
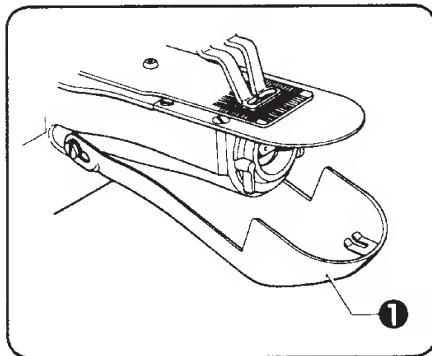


7-5. Replacing the bobbin case and threading the thread

CAUTION



- Turn off the power switch before removing and replacing the bobbin case, otherwise the machine may operate if the foot switch is depressed by mistake and serious injury could result.

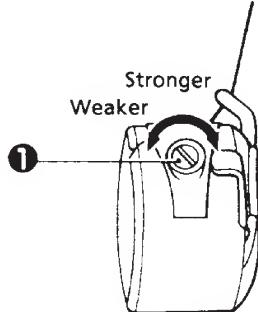


- Pull the large shuttle hook cover ① toward you to open it.
- Insert a new bobbin into the bobbin case, and then pass the thread through the slot ② and pull it out from the thread hole ③. Check that the bobbin turns in the direction of the arrow when the thread is pulled at this time.
- Pass the thread through the lever thread hole ④, and then pull out approximately 30 mm of thread.

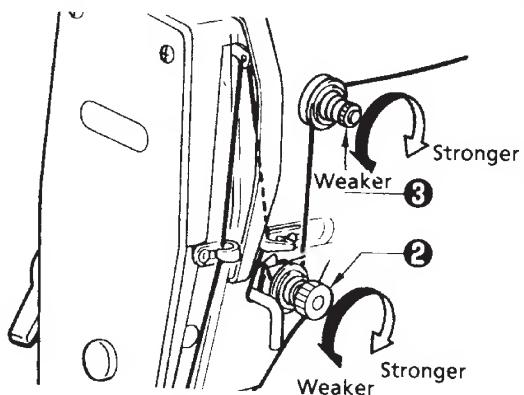
7-6. Thread tension reference guide

Use	B430E · B433E				B431E
	Denim (-2) ≈ 1	General clothing (-1, -5) ≈ 1	Knitted wear (-7) ≈ 1	General clothing (-2, -3)	
Upper thread	#20 or equivalent	#30 or equivalent	#50 or equivalent	#60 or equivalent	#50 or equivalent
Lower thread	#30 or equivalent	#50 or equivalent	#60 or equivalent	#80 or equivalent	#60 or equivalent
Upper thread tension	170 - 220 g	110 - 150 g	60 - 120 g	80 - 130 g	60 - 120 g
Lower thread tension	20 - 30 g	←	←	←	20 - 30 g
Thread takeup spring height	8 - 10 mm	←	6 - 8 mm	←	6 - 8 mm
Thread takeup spring tension	150 - 200 g	←	40 - 60 g	40 - 60 g	40 - 60 g
Pre-tension	30 - 50 g	←	10 - 15 g	15 - 30 g	10 - 15 g
Needle	DP × 17 NY#19	←	DP × 5#16	DP × 5#9	DP × 5#16
Normal sewing speed	2300 spm	←	2000 spm	←	2000 spm
Thread trimming speed	700 spm	←	400 spm	←	400 spm

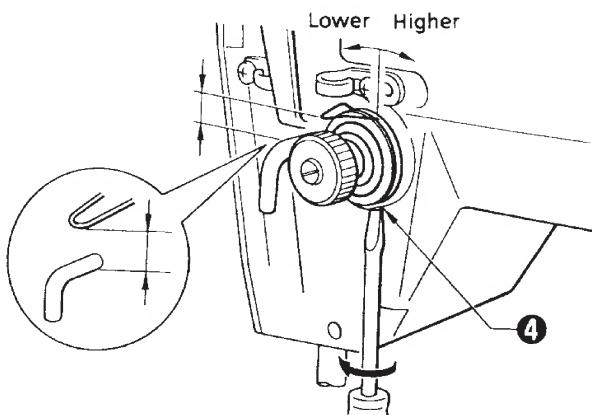
※1 Figures in brackets indicate the machine head specifications for the B430E.

7-6-1. Lower thread tension

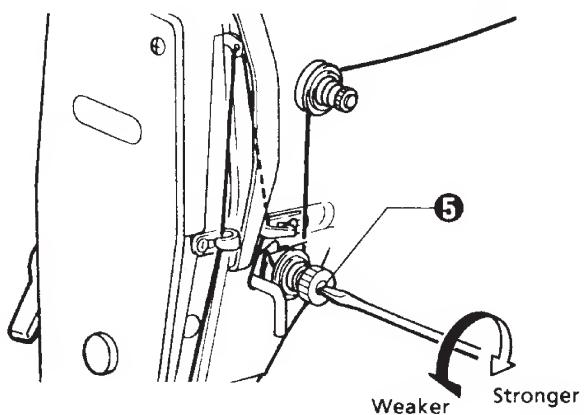
Adjust the thread tension to the weakest possible tension by turning the thread tension nut ① until the bobbin case will not drop by its own weight while the thread end coming out of the bobbin case is held.

7-6-2. Upper thread tension

Turn the tension nut ② (main tension) to adjust the tension as appropriate for the material being sewn. Furthermore, turn the thread nut ③ (sub-tension) to adjust the remaining length of upper thread to 35 - 40 mm.

7-6-3. Thread takeup spring height

Loosen the set screw ④ and turn the tensioner body to adjust the thread takeup spring height.

7-6-4. Thread takeup spring tension

Turn the tension stud ⑤ with a screwdriver.

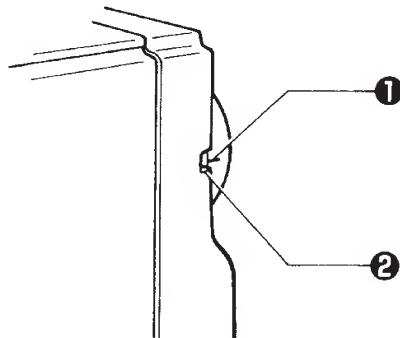
8. SEWING

CAUTION

-  • Turn off the power switch at the following times, otherwise the machine may operate if the foot switch is depressed by mistake, which could result in injury.
 - Threading
 - When replacing the bobbin and needle
 - When not using the machine and when leaving the machine unattended
-  • Do not touch any of the moving parts or press any objects against the machine while sewing, as this may result in personal injury or damage to the machine.

Before starting sewing.....

- Check that the needle bar is at its highest position.
Turn the machine pulley so that the index mark ① on the pulley is between the marks ② on the belt cover.
*If the machine is started while the index mark ① is not between these two marks ②, error message "E-5" will be displayed.

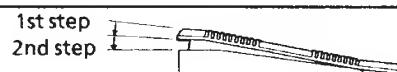


1. Turn on the power switch.
(The POWER indicator will illuminate and the program number will flash in the display.)

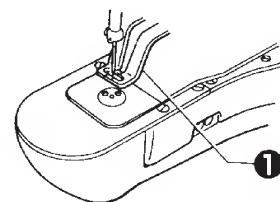


2. Depress the foot switch to the 2nd step.

(The feed mechanism will move to the starting position and the work clamp ① will rise.)



*Note that if the foot switch is pressed to the 2nd step while the display is illuminated, the machine will start operating.

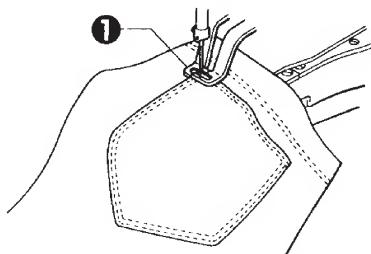


3. Place the material to be sewn under the work clamp ①, and then depress the foot switch.

When the foot switch is pressed to the 1st step, the work clamp ① will lower.

If you would like to shift the position of the material, release the foot switch.

The work clamp ① will then rise again.



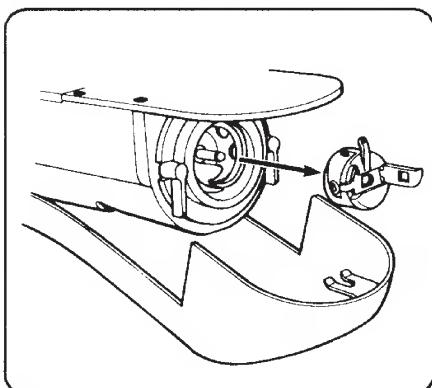
4. Once sewing is completed and the thread has been trimmed, the work clamp will rise.

9. MAINTENANCE AND INSPECTION

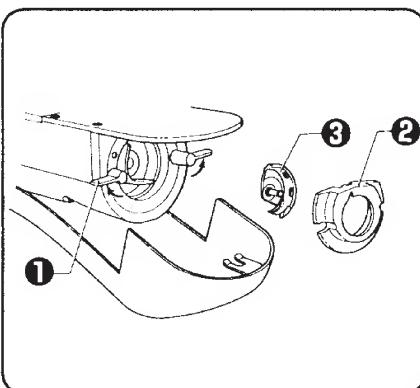
CAUTION

-  • Turn off the power switch before starting any cleaning work, otherwise the machine may operate if the foot switch is depressed by mistake, which could result in injury.
-  • Be sure to wear protective goggles and gloves when handling the lubricating oil and grease, so that they do not get into your eyes or onto your skin, otherwise inflammation can result. Furthermore, do not drink the oil or eat the grease under any circumstances, as they can cause vomiting and diarrhoea. Keep the oil out of the reach of children.

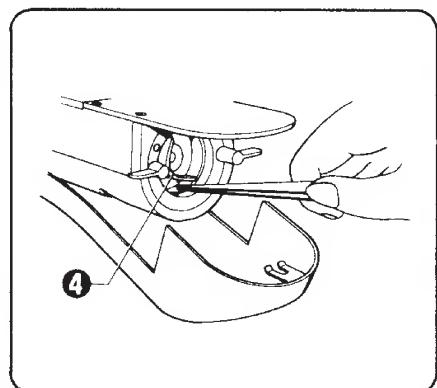
9-1. Cleaning the rotary hook



1. Pull the large shuttle hook cover ① toward you to open it, and then remove the bobbin case.



2. Open the large shuttle hook set claw ① in the direction indicated by the arrow, and then remove the large shuttle hook ② and the inner rotary hook ③.



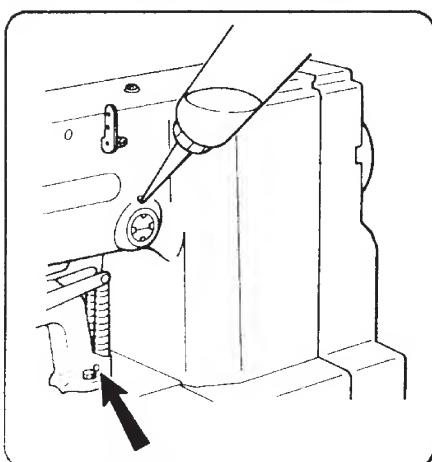
3. Clean all the dust and thread ends from around the driver ④, the top of the rotary hook thread guide and the shuttle race.

9-2. LUBRICATION

NOTE 1: Fill the machine with oil when the oil level is down to about one-third full in the oil sight glass. If oil is not added and the oil drops below this level, there is the danger that the machine may seize during operation.

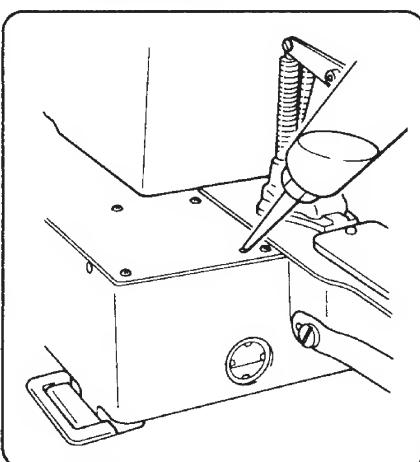
NOTE 2: Be sure to let the machine operate for a while after adding the oil.

NOTE 3: Use only specified Brother oil (Nisseki Sewing Lube 10) for the machine oil.

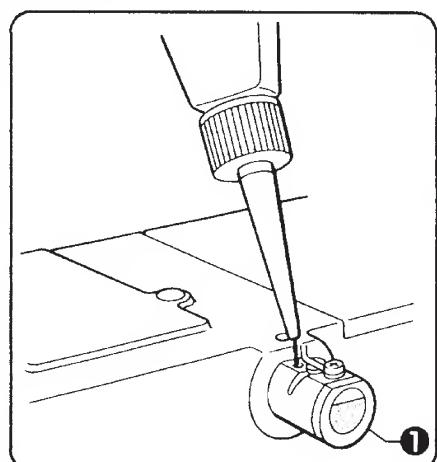


1. Fill the arm-side oil tank with oil.

*When setting up the sewing machine and when it hasn't been used for an extended period of time, be sure to add 2-3 drops of oil at the places indicated by the arrow.

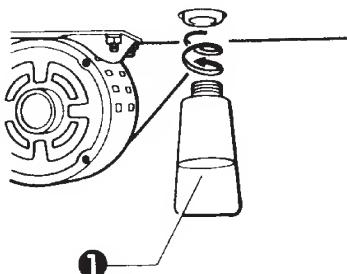


2. Fill the bed-side oil tank with oil.



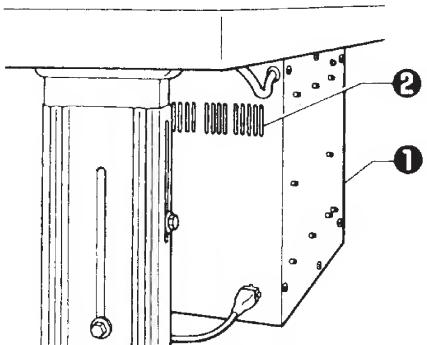
3. If using the liquid cooling tank ①, fill it with silicon oil (100 cs).

9-3. Draining the oil



1. Remove and empty the waste oil container ① whenever it is full.
2. After emptying the waste oil container ①, screw it back into its original position.

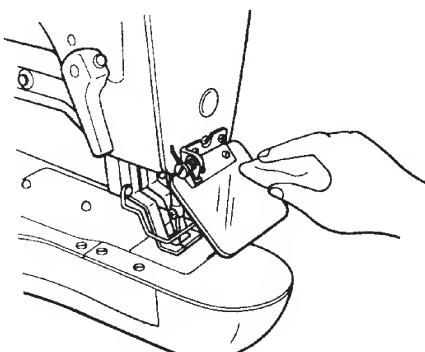
9-4. Cleaning the control box air inlet port



Use a vacuum cleaner to clean the filter in the air inlet port ② of the control box ① at least once a month.

*If the machine is used while the air inlet port is blocked, the inside of the control box will overheat. When this happens, the overheating error code ("E-d") will be displayed and you will not be able to operate the sewing machine.

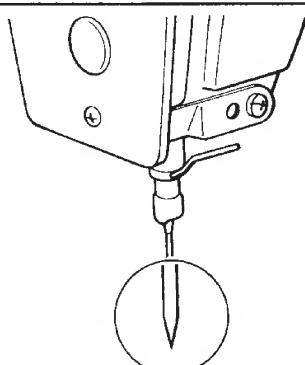
9-5. Cleaning the eye guard



Wipe the eye guard clean with a soft cloth.

NOTE: Do not use solvents such as kerosene or thinner to clean the eye guard.

9-6. Checking the needle



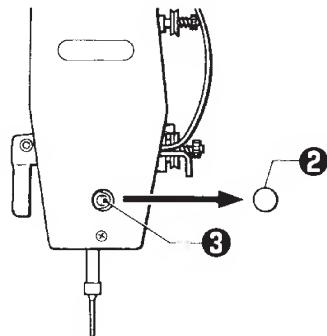
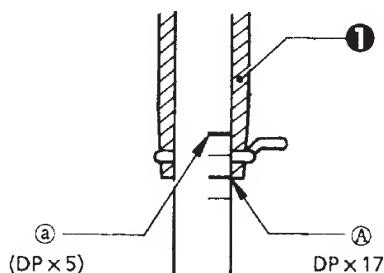
Always check that the tip of the needle is not broken before starting sewing.

10. STANDARD ADJUSTMENTS

CAUTION

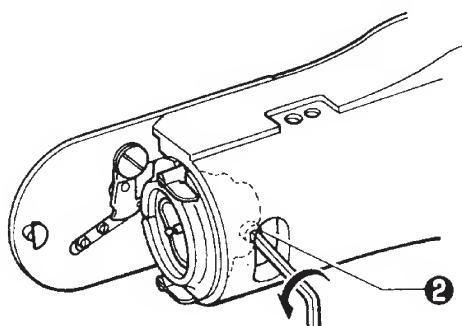
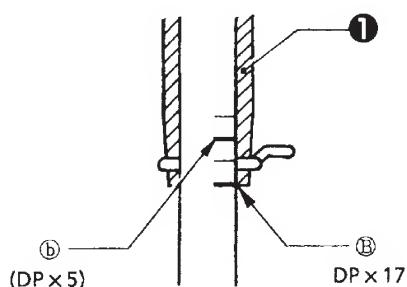
- Maintenance and inspection of the sewing machine should only be carried out by a qualified technician.
- Ask your Brother dealer or a qualified electrician to carry out any maintenance and inspection of the electrical system.
- Turn off the power switch and disconnect the power cord from the wall outlet at the following times, otherwise the machine may operate if the foot switch is depressed by mistake, which could result in injury.
 - When carrying out inspection, adjustment and maintenance
 - When replacing consumable parts such as the rotary hook and knife
- Hold the machine head with both hands when tilting it back or returning it to its original position. Furthermore, after tilting back the machine head, do not push the face plate side or the pulley side from above, as this could cause the machine head to topple over, which may result in personal injury or damage to the machine.
- If the power switch needs to be left on when carrying out some adjustment, be extremely careful to observe all safety precautions.
- If any safety devices have been removed, be absolutely sure to re-install them to their original positions and check that they operate correctly before using the machine.

10-1. Adjusting the needle bar height



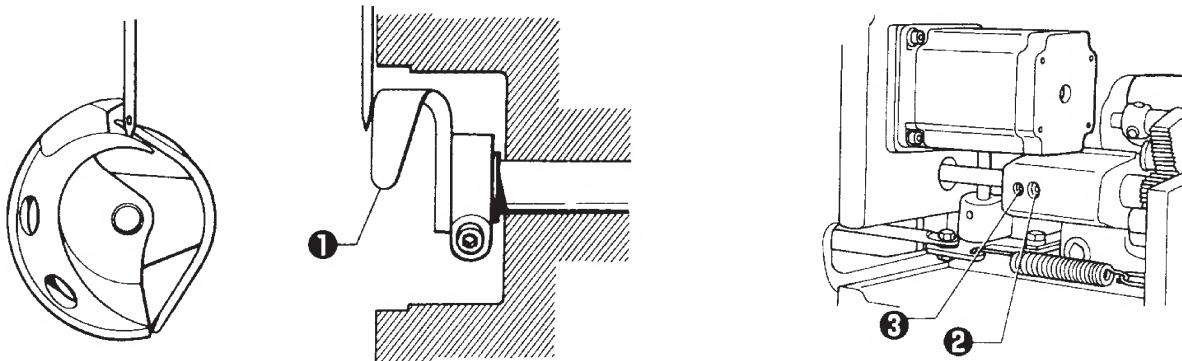
Turn the machine pulley to move the needle bar to the lowest position. Then remove the rubber plug ②, loosen the screw ③ and then move the needle bar up or down to adjust so that the second reference line from the bottom of the needle (reference line ④) is aligned with the lower edge of the needle bar bush ①.
*If using a DP x 5 needle, use the highest reference line (reference line ⑤).

10-2. Adjusting the needle bar lift amount



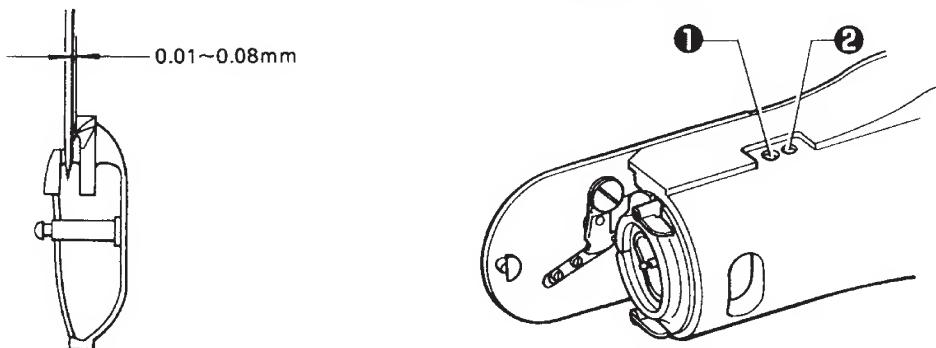
Turn the machine pulley to raise the needle bar from the lowest position until the lowest reference line on the needle (reference line ④) is aligned with the lower edge of the needle bar bush ①. Then loosen the screw ② and move the driver to adjust so that the tip of the rotary hook is aligned with the needle center line.
*If using a DP x 5 needle, use the second reference line from the top of the needle (reference line ⑤).

10-3. Adjusting the driver needle guard



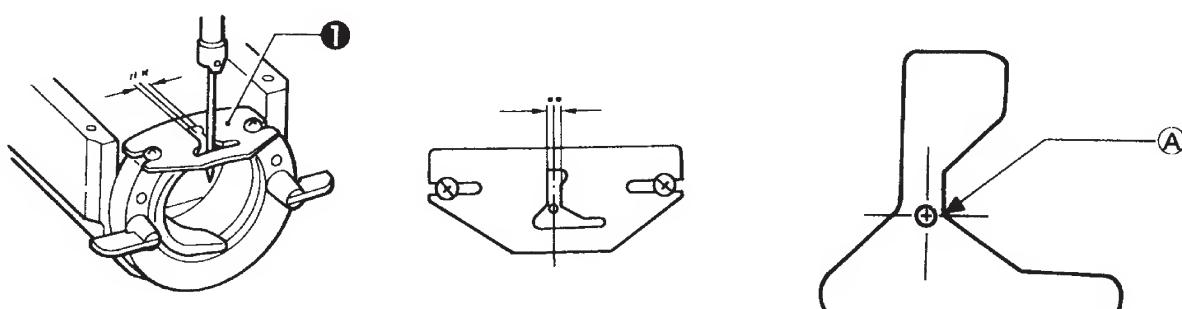
Turn the machine pulley to align the tip of the rotary hook with the needle center line. Then loosen the set screw ② and turn the eccentric shaft ③ to adjust so that the driver needle guard ① contacts the needle. If the needle contact pressure is too great, skipped stitches may occur. On the other hand, if the driver needle guard ① is not touching the needle, the tip of the inner rotary hook will obstruct the needle, resulting in an excessively high amount of friction.

10-4. Adjusting the needle clearance



Turn the machine pulley to align the tip of the rotary hook with the needle center line. Then loosen the set screw ① and turn the eccentric shaft ② to adjust so that the clearance between the needle and the rotary hook is 0.01 - 0.08 mm.

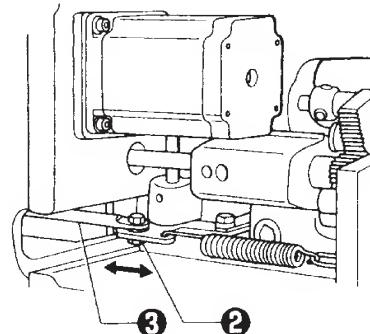
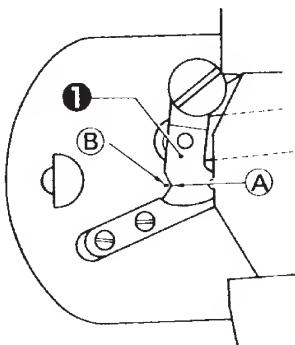
10-5. Adjusting the shuttle race thread guide



The needle groove of the shuttle race thread guide ① should be aligned with the center of the needle plate hole, and the needle center and the angled section ② should be aligned.

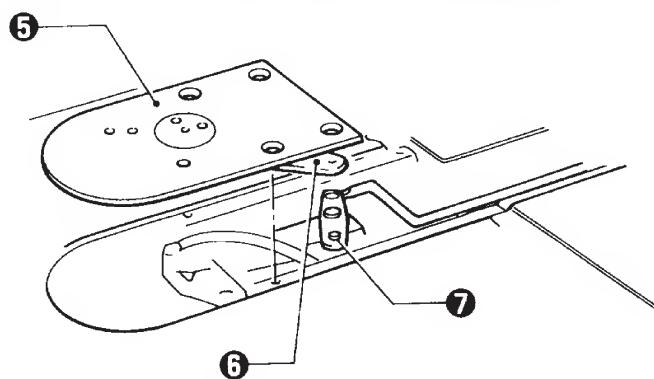
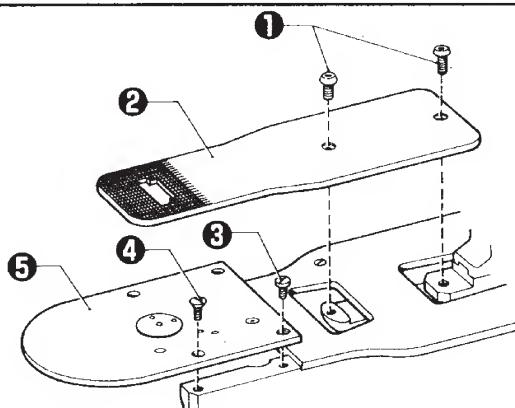
NOTE: If the shuttle race thread guide is in the wrong position, thread breakages, soiled thread or catching of the thread may occur.

10-6. Adjusting the movable knife

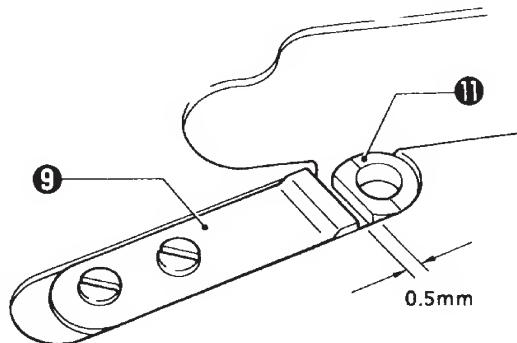
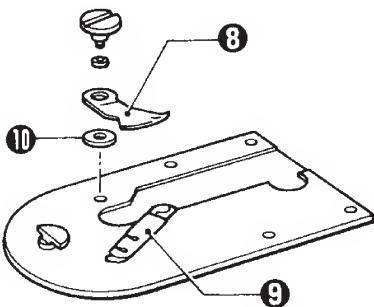


Loosen the nut ② and move thread trimmer rod L ③ to the left or right to adjust so that the V section ① of the movable knife ① is aligned with the index mark ② on the needle plate when the machine is at the stop position.

<Replacing the movable knife and fixed knife>

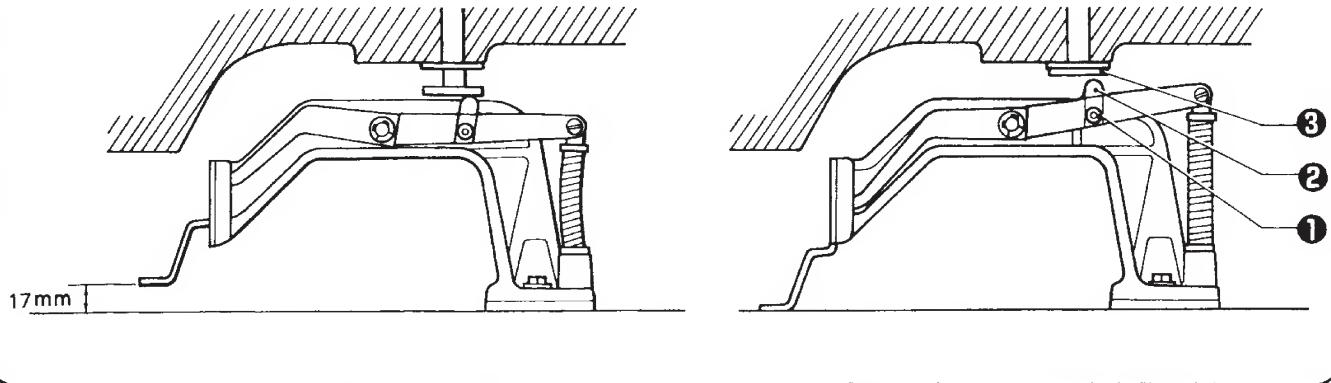


1. Open the large shuttle hook cover, remove the screw ①, and then remove the feed plate ②.
2. Remove the two screws ③ and the two screws ④, and then remove the needle plate ⑤.
3. Remove the thread trimmer connecting rod ⑥ from the connecting rod lever pin ⑦.



4. Remove the movable knife ⑧ and replace it with a new one. At this time, check that the movable knife ⑧ and the fixed knife ⑨ cut the thread cleanly. If necessary, adjust by using the appropriate movable knife washer ⑩ (supplied as accessories).
5. Install the fixed knife ⑨ at a distance of 0.5 mm from the needle hole plate ⑪.
6. Place the thread trimming connecting rod ⑥ onto the connecting rod lever pin ⑦, and then install to the needle plate ⑤.

10-7. Adjusting the work clamp lift amount



The maximum work clamp lift amount is 17 mm from the top of the needle plate.
The lift amount for each model is adjusted as shown in the table at the time of shipment.

	B430E			B431E	B433E		
Use	General clothing (-1 - -5)	Denim (-2)	Knitted wear (-7)	General clothing (-2 - -3)	General clothing	Denim	Knitted wear
Lift amount	10^{+0} mm	14^{+0} mm	9^{+0} mm	10^{+0} mm	10^{+0} mm	14^{+0} mm	9^{+0} mm

To adjust the work clamp lift amount, loosen the bolt ① and move the presser arm lever plate ② up or down.

*If movement is sluggish when the work clamp is being raised and lowered, it may not be possible to increase the work clamp lift amount.

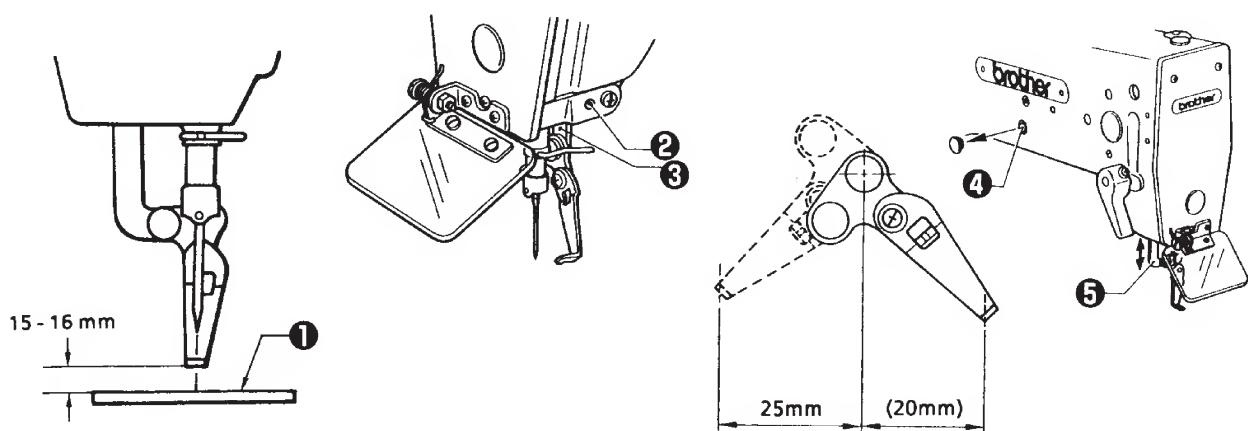
Apply grease to the bottom of the presser plate ③ to the top of the presser arm lever plate ② and to the sliding part of the work clamp (grease is already applied at the time of shipment), and check that the movement becomes easier.

*If the work clamp cannot be raised or lowered, error code "E-6" will be displayed.

*Check that there is a gap between the presser arm lever plate ② and the presser plate ③ when the presser foot is lowered.

10-8. Adjusting the thread wiper

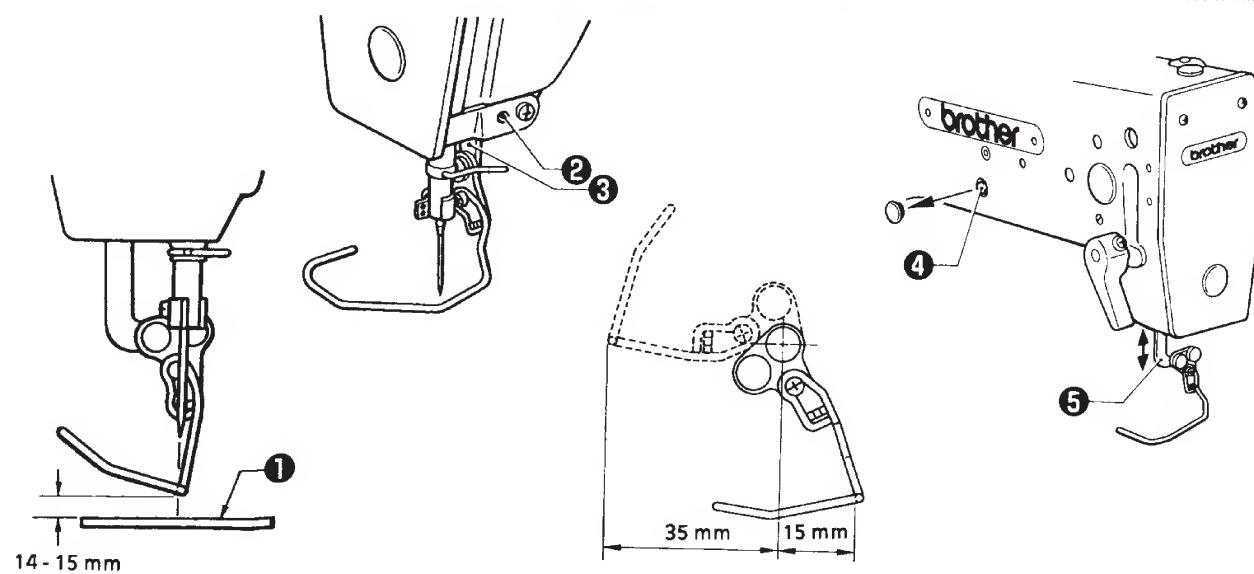
[B430E · B433E]



NOTE: The shape of the thread wiper for the B433E is different from the shape shown here.

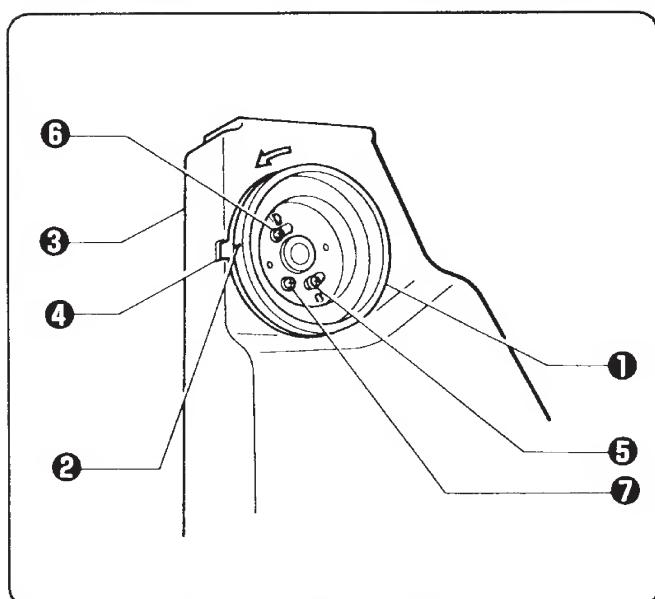
1. Loosen the set screw ② and move the wiper arm support ③ up or down to adjust so that there is a clearance of 15 - 16 mm between the bottom of the thread wiper and the needle plate ① when the thread wiper is aligned with the center of the needle bar.
2. Loosen the screw ④ and move the thread guide connecting plate ⑤ up or down to adjust so that the thread wiper is approximately 25 mm from the needle when it is wiping the thread.

[B431E]



1. Loosen the set screw ② and move the wiper arm support ③ up or down to adjust so that there is a clearance of 14 - 15 mm between the bottom of the thread wiper and the needle plate ① when the thread wiper is aligned with the center of the needle bar.
2. Loosen the screw ④, and move the thread guide connecting plate ⑤ up or down so that the thread wiper will be 15 mm from the center of the needle bar before it wipes the thread, or 35 mm from the same after it has wiped the thread.

10-9. Adjusting the needle up stop position



The needle up stop position is adjusted so that the index mark ② on the machine pulley ① is inside the mark ④ on the belt cover ③.

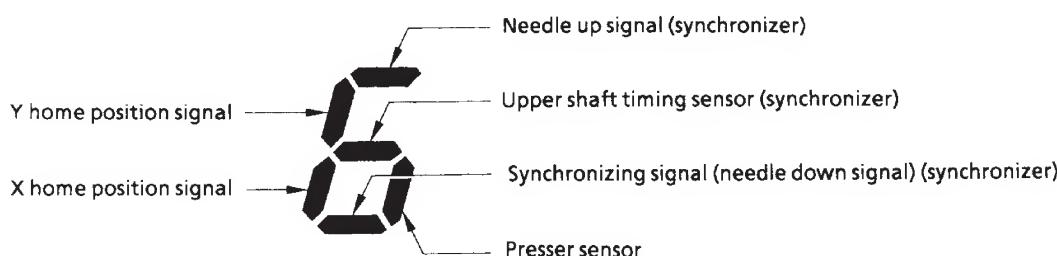
If adjustment is necessary, loosen the screw ⑤ at the "U" mark of the machine pulley ① and adjust the position of the machine pulley ①. The machine pulley ① stops later if it is turned clockwise, and it stops earlier if it is turned counterclockwise.

*The screw ⑥ at the "D" mark is an adjustment screw for the needle down detection function and is adjusted to match the feed timing, so it should not be loosened.

*The screw ⑦ is a screw for detecting the machine stop position, and should not be loosened.

*If the index mark ② is not inside the mark ④ when the sewing machine is started, error code "E-5" will be displayed. Turn the machine pulley to move the index mark ② to the correct position and then start the sewing machine.

10-10. Checking the input sensors



1. Turn on the power switch.
2. Press the menu switch until the X-SCALE indicator illuminates.
3. While pressing the TEST switch, press the RESET switch.
4. The conditions of the various input sensors will be shown in the first digit display area of the display as indicated above.
5. Press the TEST switch once more to return the display to the normal condition.

Display conditions

Y home position sensor	: Illuminates when at the home position
X home position sensor	: Illuminates when at the home position
Needle up signal	: Illuminates when the needle is raised
Upper shaft sensor	: Illuminates when a signal is being input
Synchronizing signal	: Illuminates when the needle is lowered
Presser sensor	: Illuminates when the presser is lowered

10-11. Checking the input voltage

1. Turn on the power switch.
2. Press the menu switch until the Y-SCALE indicator illuminates.
3. While pressing the TEST switch, press the RESET switch.
4. The input voltage conditions will be shown in the display.
*The voltage values are expressed as a percentage (100% when 200V is supplied to the power supply circuit board).
5. Press the TEST switch once more to return the display to the normal condition.

[When a normal voltage is input]

200-V specifications	[090] - [110]
220-V specifications	[100] - [120]
230-V specifications	[105] - [125]
100-V, 380-V, 400-V and 415-V specifications	[100] - [120]

10-12. Moving stitch patterns

- Programs which have already been programmed can be moved up, down and to the left and right.
(However, such patterns will be reset if the power supply is turned off or the program number is changed.)
- The feed position can be set to the any position desired.

1. Moving a stitch pattern

(1) Select the program number, and then press the start switch once to move the feed mechanism to the sewing start position.

(2) While pressing the TEST switch ③, press the RESET switch ②.

The TEST indicator ④ will illuminate and < → > will appear in the display window ⑫.

(3) Press the MENU switch ⑥ so that either the X-SCALE indicator ⑧ or Y-SCALE indicator ⑨ illuminates.

(4) Turn the setting dial ⑪ to move the feed mechanism one pulse at a time.

① If the setting dial is turned counterclockwise while the X-SCALE indicator is illuminated, the feed mechanism will move to the right.

② If the setting dial is turned clockwise while the X-SCALE indicator is illuminated, the feed mechanism will move to the left.

③ If the setting dial is turned counterclockwise while the Y-SCALE indicator is illuminated, the feed mechanism will move up.

④ If the setting dial is turned clockwise while the Y-SCALE indicator is illuminated, the feed mechanism will move down.

(5) When the TEST switch ③ is pressed after the above fine adjustments have been made, the TEST indicator ④ and display window ⑫ will both switch off and movement of the stitch pattern will be completed. (*1)

2. Moving the feed mechanism to the desired position (feed test)

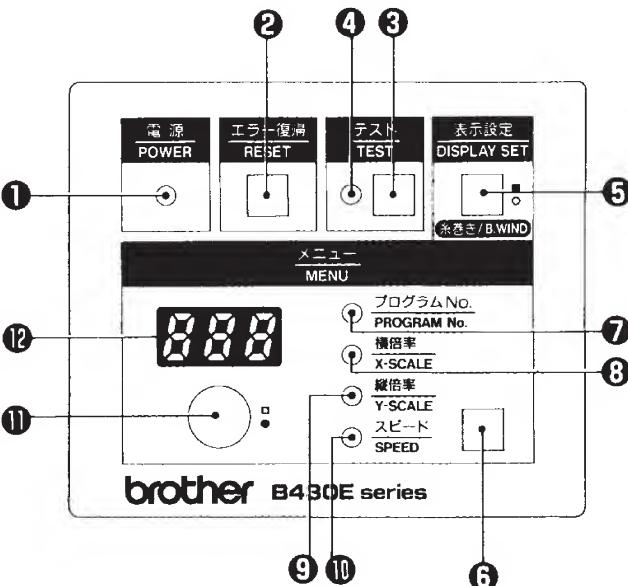
(1) Same as 1-(2).

(2) Same as 1-(3).

(3) Same as 1-(4).

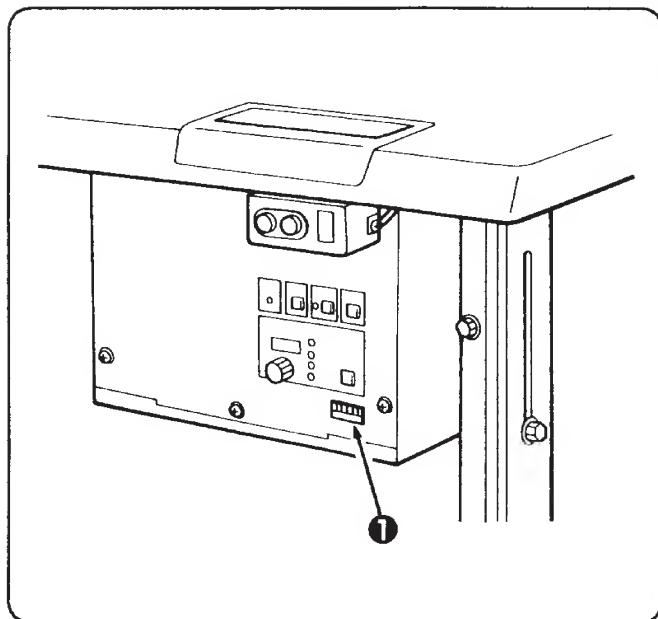
(4) Same as 1-(5).

(*1) When moving the stitch pattern, the sewing start position can be moved to any desired point within the sewing area, but if the pattern goes outside the sewing area, an error will occur during sewing and you will not be able to sew the pattern. Give consideration to the pattern as a whole when moving it.



11. CHANGING FUNCTIONS USING THE DIP SWITCHES

11-1. Operation panel DIP switches

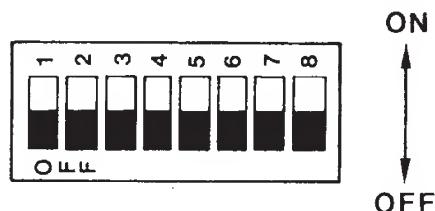


The operation panel DIP switches ① are used to change functions which might need to be changed depending on the sewing conditions.

Caution: Always turn off the power before setting the DIP switches.

The functions shown in the table below can be changed by means of these DIP switches.

*All DIP switches are set to OFF at the time of shipment.



Switch	Motion when set to ON	
DIP A-1	Presser does not automatically lift after sewing is completed.	See "11-2. Setting the presser mode"
DIP A-2	Two-pedal mode is available.	
DIP A-3	User program mode is available.	
DIP A-4	—	
DIP A-5	The presser does not rise automatically when a split is found.	
DIP A-6	—	
DIP A-7	Enlargement of pattern size is not available.	
DIP A-8	Program number is fixed.	

11-2. Setting the presser mode

Through the combination of DIP switches A-1 and A-2 on the operation panel, presser motions can be set as follows:

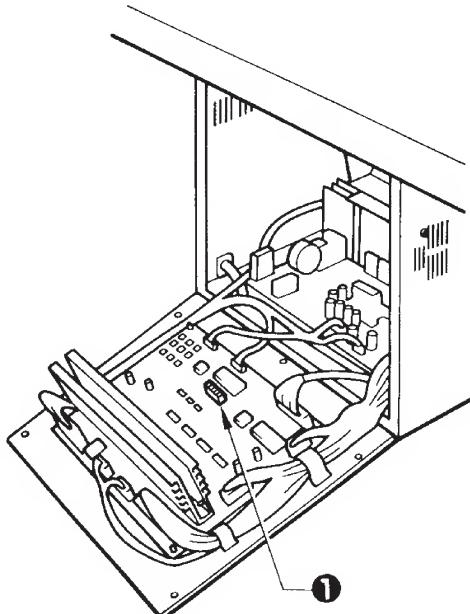
DIP A-1	DIP A-2	Pedal specifications	Raising the presser at the sewing end
—	—	Single pedal	Presser is raised automatically.
ON	—	Single pedal	Presser is raised by pressing the pedal.
—	ON	Two pedals	Presser is raised automatically, then it is lowered by pressing the pedal.
ON	ON	Two pedals	Presser is kept lifted while the pedal is pressed.

11-3. DIP switches inside the control box

⚠ DANGER



- Wait at least 5 minutes after turning off the power switch and disconnecting the power cord from the wall outlet before opening the face plate of the control box. Touching areas where high voltages are present can result in severe injury.



The DIP switches ① inside the control box are used to change functions which do not often need to be changed once they have been set.

The functions can be changed as shown in the table below by changing the positions of the DIP switches ①.

*All DIP switches are set to OFF at the time of shipment.

Caution: When opening the cover, hold it securely so that it does not fall down.

Switch	Motion when set to ON	
DIP B-1	First two stitches are sewn at a low speed of 260 spm.	
DIP B-2	Last two stitches are sewn at a low speed of 260 spm.	
DIP B-3	Last two stitches are sewn at a low speed of 400 spm regardless of the pattern.	SEE NOTE
DIP B-4	Last two stitches are sewn at a low speed of 700 spm regardless of the pattern.	SEE NOTE
DIP B-5	—	
DIP B-6	Low speed sewing is not performed at the start of sewing.	
DIP B-7	—	
DIP B-8	Sets the sewing area to an unlimited area.	

NOTE: When the DIP switch Nos. 2, 3 and 4 are all off, last two stitches of sewing pattern No. 2, 3 or 6 will be sewn at 700 spm for denim specification; other than those, about 400 spm will be set automatically.

11-4. Using user programs

User program...

It can store six different programs (designated as A, b, c, d, E, and F) which can include details such as the program number, X scale, Y scale and sewing speed. If you are sewing certain patterns over and over again, it is useful to record the settings for these patterns into a user program.

Recording a user program

1. Turn off the power switch and then set DIP switch A-3 of the DIP switches ① to ON.

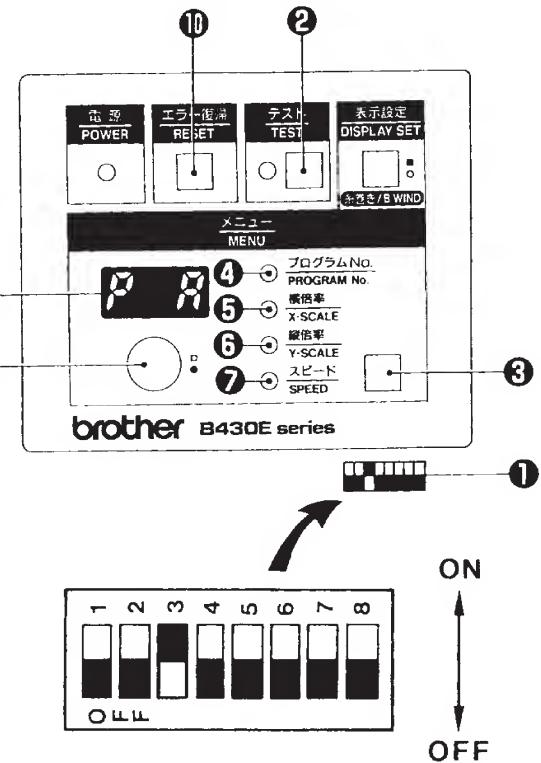


2. Turn on the power switch.

While pressing the TEST switch ②, press the menu switch ③.

* All of the menu indicators (④ to ⑦) will illuminate and the mode will switch to recording mode.

* In addition, "P A" will appear in the display ⑧ to indicate that user program A is being recorded. (Once recording of A is completed, b will be displayed; once b is completed, c will be displayed. Thus the next unrecorded program letter is always displayed.)



3. Press the menu switch ③.

* The PROGRAM No. indicator ④ will illuminate.



4. Turn the rotary switch ⑨ to select the number for the program that you would like to record.



5. Press the menu switch ③. * The X-scale indicator ⑤ will illuminate.



6. Turn the rotary switch ⑨ to select the X scale setting that you would like to record.



7. Press the menu switch ③. * The Y-scale indicator ⑥ will illuminate.



8. Turn the rotary switch ⑨ to select the Y scale setting that you would like to record.



9. Press the menu switch ③. * The SPEED indicator ⑦ will illuminate.



10. Turn the rotary switch ⑨ to select the sewing speed setting that you would like to record.

↓
11. Press the menu switch ③.

- * This completes the recording of user program A.
- * "P b" will then appear in the display ④, to indicate that user program b is now being recorded. Repeat steps 3. through to 11 to record further programs as desired.

↓
12. Press the TEST switch ②. This completes the recording.

- * The menu indicators (④ to ⑦) will all illuminate and "A" will appear in the display to indicate that user program A is currently selected.
- * If the TEST switch ② is pressed before recording is completed, the current user program will not be recorded.

Using a user program

1. While pressing the DISPLAY SET/B. WIND switch, turn the rotary switch ⑨ to select the program number for the user program that you would like to use.

2. Depress the foot switch to the second step.

3. Check the sewing pattern (see P17), and then sew the pattern selected.

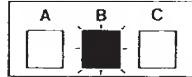
*In addition, you can use the optionally-available handy switch ⑩ to quickly and conveniently switch between the user programs which have been recorded.

To select A



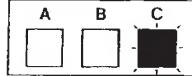
Press switch A; indicator A will illuminate.

To select b



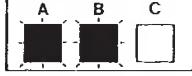
Press switch B; indicator B will illuminate.

To select c

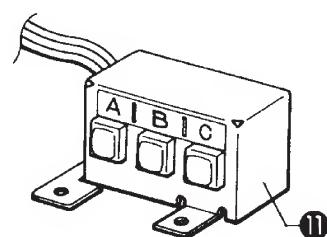


Press switch C; indicator C will illuminate.

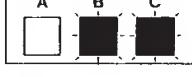
To select d



Press switches A and B simultaneously; indicators A and B will illuminate.

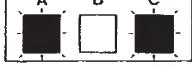


To select E



Press switches B and C simultaneously; indicators B and C will illuminate.

To select F



Press switches A and C simultaneously; indicators A and C will illuminate.

Clearing the user programs

1. Switch the machine to recording mode by the procedure in steps 1. and 2. of recording a user program.

↓
2. Press the RESET switch ⑩.

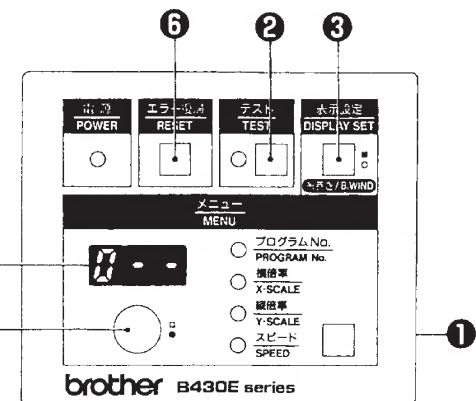
All of the user programs which have been recorded will then be cleared.

12. CHANGING SPECIAL FUNCTIONS USING THE MEMORY SWITCHES

The functions of the switches on the operation panel ① can be changed to carry out special functions.

*All of the memory switches are set to OFF at the time of shipment.

1. Turn on the power switch.
2. While pressing the TEST switch ②, press the DISPLAY SET/B.WIND switch ③.
"0 - -" will appear in the display ④.
3. Turn the rotary switch ⑤ until the character at the left side of the display ④ matches the character ("0" to "F" of the function in the table below that you would like to assign.)
4. When the DISPLAY SET/B.WIND switch ③ is pressed, the two spaces at the right in the display window will change from " - -" to "on".
5. If this switch is pressed once more, the display will change from "on" to " - -".
*If the RESET switch ⑥ is pressed at this time, all memory switches will be reset to the "off" setting.
Press the TEST switch ②. The display will return to normal.



Switch	Motion when set to ON
memo-0	At the end of sewing, the feed plate will be returned to the sewing start point via mechanical home position.
memo-1	Work clamp will move to the sewing start point, and then will be lifted. *
memo-2	When using the handy switch to select a user program, the feed will move automatically to the next starting point at the same time as the program is switched. (Normally it moves to the starting point after sewing starts.)
memo-3	When sewing using user programs, the programs which have been set will be sewn in numerical order.
memo-4	Fixes the sewing speed at the minimum speed for the data.
memo-5	Changes the feed timing. (Refer to the "Feed timing settings" table below.)
memo-6	
memo-7	—
memo-8	Switches to single-stitch test mode.
memo-9	The sewing start point becomes the reference point for enlargements and reductions.
memo-A, b, c, d	—
memo-E	Test feeding will be performed at the same speed as that for actual sewing. (This is used for checking feeding operation.)
memo-F	At the end of sewing, the clamp will automatically open and close once. (This is used for running-in operation.)

*The work clamp rises at the final stitch to enable the quick taking out of the workpieces.

Feed timing settings

Memory switch positions		Feed timing	Standard settings for each model	Example (* 1)			
				3 mm stitch length			
memo-5	memo-6			2000spm	1600spm	1300spm	1000spm
off	off	Slow	B430E	135°	160°	180°	200°
off	on	Medium slow		125°	125°	130°	130°
on	off	Medium fast		115°	110°	105°	100°
on	on	Fast	B431E, B433E	110°	100°	90°	85°

*1 The angles given in the table are the angles of rotation of the upper shaft from the point where the needle down signal is input until the feed mechanism starts to operate, and are for reference only.

Action angles will vary depending on factors such as the weight of the material being sewn and the stitch length.

*2 The memory switches are reset to the standard settings before the sewing machine is shipped from the factory and when the memory is cleared.

13. LIST OF ERROR CODES

If a malfunction should occur with the sewing machine, a buzzer will sound and an error code will appear in the display window. Press the RESET switch and then eliminate the cause of the error.

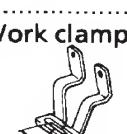
Error code	Cause	Remedy
E-2	The motor has stopped, the motor will not run, or there is a malfunction of the synchronizer.	Turn off the power, turn the machine pulley and check if the machine is locked. Check the synchronizer connections. Check whether connector P8, P9, P10 or P11 is disconnected.
E-3	Sewing data extends outside sewing area.	Press the RESET switch, and then set the enlargement ratio again.
E-4	The length of a stitch exceeds 10 mm, or there is some other abnormality in the sewing data.	Press the RESET switch, and then set the enlargement ratio again. If programming a new PROM, repeat the procedure from the beginning.
E-5	The needle bar does not stop when the needle is raised.	Turn the machine pulley to align the index mark with the needle up stop position. Adjust the needle up stop position to the standard position, or adjust the V-belt tension. Check whether connector [P2] of the synchronizer cord is disconnected.
E-6	The presser does not move up and down.	Refer to "troubleshooting" on page 41.
E-7	The cooling fan does not operate.	Turn off the power, and then check if the cooling fan is blocked with scraps of thread. *
E-8	Abnormality in motor PROM or malfunction of main P.C. board.	Turn off the power, and then contact an authorized service center.
E-9	Abnormal voltages occur.	Turn off the power and then, check the input voltage. (See page 30.)
E-A	The home position cannot be detected (malfunction of home position sensor), or malfunction of power supply P.C. board. You turned on the power switch immediately after turning it off.	Turn off the power, and then contact an authorized service center. Wait at least 3 seconds after turning off the power switch before turning it on.
E-b	You tried to change the program number when DIP switch A-8 was set to ON.	Press the RESET switch. Set DIP switch A-8 to OFF before trying to change the program number.
E-d	The heat sink of the main P.C. board is abnormally hot.	Turn off the power, and then clean the air inlet port of the control box.
E-E	Malfunction of EEPROM (malfunction of main P.C. board).	Turn off the power, and then wait a while before turning it back on. If the error keeps reappearing, contact an authorized service center.
E-F	The power supply relay does not operate (malfunction of power supply P.C. board).	Turn off the power, and then contact an authorized service center.

*Wait at least 5 minutes after turning off the power switch and disconnecting the power cord from the wall outlet before opening the face plate of the control box. Touching areas where high voltages are present can result in severe injury.

14. GAUGE PARTS LIST ACCORDING TO SUBCLASSES

★ The following are standard gauge parts according to each specification.

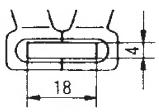
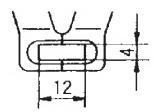
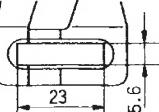
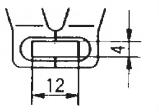
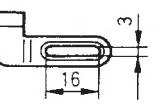
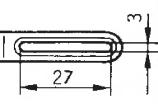
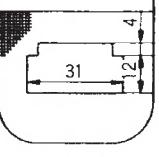
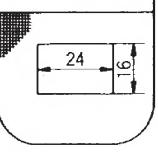
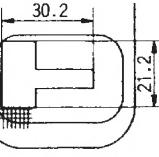
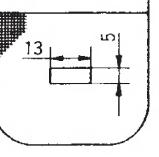
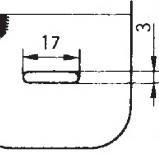
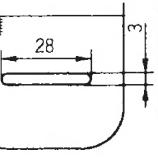
(In the following table, parts marked with ◎ are common with the LK3-B430; parts with ○ are common with the BAS-304A.)

Model	B430E			
Subclass	-2	-1	-5	-7
Part name \ Use	For denim	For general clothing		For knitted wear
Needle hole plate 	○ Needle hole plate E (Ø2.6) S10212-101	○ Needle hole plate F (Ø2.2) S10213-001	○ Needle hole plate A (Ø1.6) S10211-001	○
Inner rotary hook assembly 	○ Inner rotary hook B assembly 152687-902	○ Inner rotary hook A assembly 152685-902		
Large shuttle hook 	○ Large shuttle hook B 152686-001	○ Large shuttle hook A 152682-001		
Tension spring 	○ Tension spring 107606-001	○ Tension spring 104525-001		
Spring 	○ Spring B 144588-001	○ Spring 145519-001		
Shuttle race base assembly 	○ Shuttle race base assembly S02427-201			Shuttle race base assembly for knitted wear S37976-001
Needle bar thread guide  A B	Needle bar thread guide A 152890-001	Needle bar thread guide B S41222-001	Needle bar thread guide A 152890-001	
Needle 	DP x 17 NY #19 S37928-019	DP x 5 #16 107415-016	○ DP x 5 #9 107415-009	○
Presser arm assembly	Presser arm assembly for denim use S37948-009	Presser arm assembly S37952-009	Presser arm assembly for knitted material use S37953-009	
Spring 	○ Spring C 154356-001	○ Spring A 153568-001		
Work clamp 	○ 5.6 x 23 (for 3 mm use) R. 153608-101 L. 154527-001	○ 4 x 18 (for 2 mm use) R. 152777-001 L. 152778-001	○ 4 x 12 (for 2 mm use) R. 152779-001 L. 152780-001	○
Feed plate 	○ 153610-101	○ 12 x 31 (Submerged-type L) 153055-201	○ 12 x 24 (Submerged-type S) 153207-201	○ 5 x 13 (for 2 mm use) 152791-201

Model	B431E		B433E		
Subclass	-2	-3	-		
Part name	Use	For general clothing	For denim	For general clothing	For knitted wear
Needle hole plate		Needle hole plate F (Ø2.2) S10213-001	Needle hole plate E (Ø2.6) S10212-101	Needle hole plate F (Ø2.2) S10213-001	Needle hole plate A (Ø1.6) S10211-001
Inner rotary hook assembly		Inner rotary hook A assembly 152685-902	Inner rotary hook B assembly 152687-902	Inner rotary hook A assembly 152685-902	
Large shuttle hook		Large shuttle hook A 152682-001	Large shuttle hook B 152686-001	Large shuttle hook A 152682-001	
Tension spring		Tension spring 104525-001	Tension spring 107606-001	Tension spring 104525-001	
Spring		Spring 145519-001	Spring B 144588-001	Spring 145519-001	
Shuttle race base assembly		Shuttle race base assembly S02427-201			Shuttle race base assembly for knitted wear S37976-001
Needle bar thread guide	A B	Needle bar thread guide B S41222-001	Needle bar thread guide A 152890-001	Needle bar thread guide B S41222-001	Needle bar thread guide A 152890-001
Needle		DP x 5 #16 107415-016	DP x 17 NY #19 S37928-019	DP x 5 #16 107415-016	DP x 5 #9 107415-009
Presser arm assembly	Presser arm assembly 431-S S41227-009	Presser arm assembly 431-L S41228-009	Presser arm assembly B S40647-009	Presser arm assembly A S40646-009	
Spring		-	-	Spring B 153569-001	Spring A 153568-001
Work clamp		Work clamp 431-S 154416-001	Work clamp 431-L 154417-001	-	-
Feed plate		Feed plate S 154419-201	Feed plate L 154420-201	-	

Standard sizes for work clamps and feed plates are as follows:

(The actual sewing area has a 1.5 mm margin on every side; inside the lines which the dimensions indicate.)

Specification	B430E				B431E		
	Model	-1	-5	-2	-7	-2	-3
R	152777-001	152779-001	153608-101	152779-001		154416-001	154417-001
L	152778-001	152780-001	154527-001	152780-001			
Work clamp							
Feed plate	153055-201	153207-201	153610-101	152791-201	154419-201	154420-201	
							

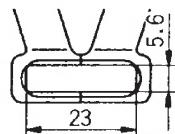
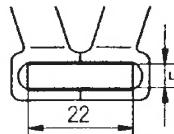
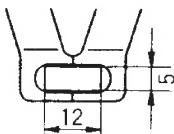
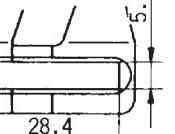
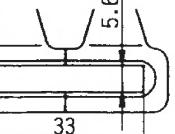
*The movable knife assy (S10205-001) and the fixed knife (S10210-101) are used.

< Gauge parts >

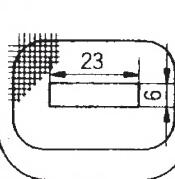
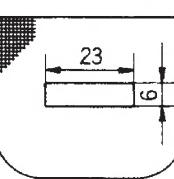
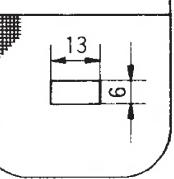
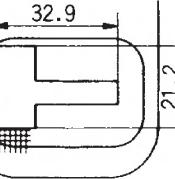
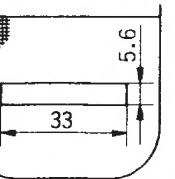
The following are provided as optional gauge parts.

(Each work clamp pair is used in combination with the feed plate directly below them.)

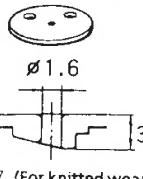
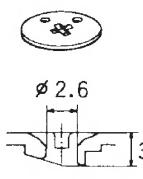
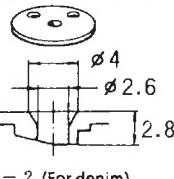
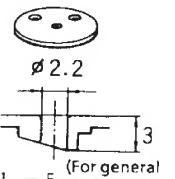
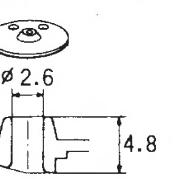
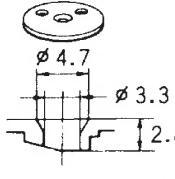
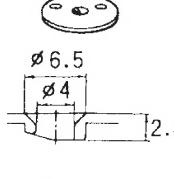
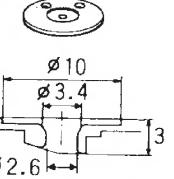
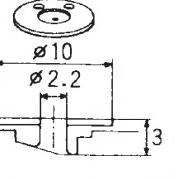
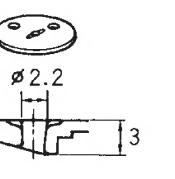
- Work clamps R and L ◎

152781-001 (For denim)	153201-001 (PL)	153203-001 (PS)	S00906-001 (1 Inch)	S33747-001 (30 mm)
152782-001 (For denim)	153202-001 (PL)	153204-001 (PS)	S00907-001 (1 Inch)	S33748-001 (30 mm)
				

- Feed plate ◎

152792-001 (For denim)	153205-201 (PL)	153206-201 (PS)	S00908-001 (1 Inch)	S33749-001 (30 mm)
				

- Needle hole plate ◎

A	S10211-001	D	S29997-001	E	S10212-101	F	S10213-001	H	S30450-001
									
L	S25127-001	M	S34348-001	ED	S30925-001	FD	S30926-001	BZ	S41013-001
									

15. TROUBLESHOOTING

Problem	Cause	Check	Remedy	Page
Presser does not rise.	Work clamp operation is sluggish. Presser lifter amount is too great. Too much friction between presser plate and presser arm lever support. Presser is contacting thread wiper.	Sliding part of the work clamp lubrication Distance between work clamp and top of needle plate Presser plate and presser arm lever support lubrication Thread wiper standby position	Grease the sliding part of the work clamp. Adjust the height of the work clamp to within 17 mm. Grease the presser plate and presser arm lever support. Adjust the position of the thread wiper.	28 28 28 29
Presser does not drop.	Presser lifter link is not moving back.	Link return spring is unhooked.	Hook the link return spring properly.	
Presser lift amount is incorrect.	Incorrect position of presser arm lever plate.	Distance between work clamp and top of needle plate	Adjust the work clamp lift amount.	28
Thread wiper does not operate correctly.	The thread wiper is obstructing the needle. Thread wiper position is incorrect.	Clearance between thread wiper and needle tip Thread wiper position	Adjust the height of the thread wiper. Adjust the operating distance of the thread wiper.	29 29
Lower thread winds to one side.	Bobbin winder thread tension stud height is incorrect.	Bobbin winder thread tension stud height	Adjust the height of the thread tension stud.	19
Lower thread winding amount is incorrect.	Bobbin presser position is incorrect.	Thread winding amount	Adjust the position of the bobbin presser.	19
Threads comes unthreaded.	Stitches being skipped at the sewing start. Uneven upper thread length.	Refer to "Skipped stitches occur". Upper thread length	Refer to "Skipped stitches occur". Adjust the sub-tension.	

Problem	Cause	Check	Remedy	Page
Upper thread breaks.	Upper thread tension is too strong.	Upper thread tension	Adjust the upper thread tension.	21
	Needle is installed incorrectly.	Needle direction	Install the needle so that the groove is facing forward.	18
	Thread is too thick for the needle.	Thread and needle	Use the correct thread for the needle.	18
	Thread takeup spring tension and height are incorrect.	Thread takeup spring tension and height	Adjust the tension and height of the thread takeup spring.	21
	Damaged or burred rotary hook, needle hole plate or needle.	Damage or burring	File smooth or replace the affected part.	
	Thread melting (synthetic thread)	Thread edge	Use a thread cooling device.	4
Lower thread breaks.	Lower thread tension is too strong.	Lower thread tension	Adjust the lower thread tension.	21
	Corners of needle hole plate or bobbin case are damaged.	Damage	File smooth or replace the affected part.	
Skipped stitches occur.	Clearance between needle and rotary hook tip is too great.	Needle clearance	Adjust the needle clearance.	26
	Incorrect needle and rotary hook timing.	Needle bar lift amount	Adjust the needle bar lift amount.	25
	Driver is contacting needle more than is necessary.	Clearance between driver and needle	Adjust the driver needle guard.	26
	Needle is bent.	Bent needle	Replace the needle.	
	Needle is installed incorrectly.	Needle direction	Install the needle so that the groove is facing forward.	18
Needle breaks.	Needle is touching the rotary hook.	Needle clearance	Adjust the needle clearance.	26
		Needle bar lift amount.	Adjust the needle bar lift amount.	25
	Needle is bent.	Bent needle	Replace the needle.	
	Wayward stitches.	Needle and feed timing	Adjust the needle down detection position.	30
	Needle is too thin.	Needle and thread	Use the correct needle for the material.	

Problem	Cause	Check	Remedy	Page
	Fixed knife is blunt.	Fixed knife blade	Sharpen or replace the fixed knife.	
	Movable knife does not pick up the thread.	Shuttle race thread guide position Needle bar lift amount	Adjust the position of the shuttle race thread guide. Adjust the needle bar lift amount.	26 25
Upper thread is not trimmed.	The movable knife does not pick up the thread because of skipped stitches at the sewing end.	Skipped stitches at sewing end	Refer to "Skipped stitches occur".	
	Movable knife position is incorrect.	Movable knife position	Adjust the position of the movable knife.	27
	Sub-tension is too weak.	Sub-tension	Turn the sub-tension nut to adjust the tension.	21
	Thread takeup spring tension and height are incorrect.	Thread takeup spring tension and height	Adjust the tension and height of the thread takeup spring.	21
Thread jamming.	Incorrect needle and rotary hook timing.	Needle bar lift amount	Adjust the needle bar lift amount.	25
	Shuttle race thread guide is not separating the threads.	Shuttle race thread guide position.	Adjust the position of the shuttle race thread guide.	26
	Shuttle race thread guide is not separating the threads.	Shuttle race thread guide position.	Adjust the position of the shuttle race thread guide.	26
Poor seam finish on reverse side of material.	Upper thread is not properly tight.	Upper thread tension	Adjust the upper thread tension.	21
	Uneven upper thread length.	Upper thread length	Adjust the sub-tension.	21
	Upper thread tension is too weak.	Upper thread tension	Adjust the upper thread tension.	21
Incorrect thread tightness.	Lower thread tension is too weak.	Lower thread tension	Adjust the lower thread tension.	21
	Thread takeup spring tension and height are incorrect.	Thread takeup spring tension and height	Adjust the tension and height of the thread takeup spring.	21